

UPPER KERR VILLAGE REVISED PART 2 TRANSPORTATION ASSESSMENT - OFFICIAL PLAN AMENDMENT

Transportation Considerations Report

Prepared For: Urban Strategies Inc.

February 2, 2022 Revised May 20 2022



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1.0 INTRODUCTION

1.1 Overview – Revised Transportation Impact Study (TIS) Report

BA Group has been retained by Urban Strategies Inc. to prepare a transportation impact assessment (TIA) on behalf of April Investments Limited (owner of 588 Kerr Street), 527079 Ontario Limited (owner of 530 Kerr Street), Trans County Development Corporation Limited (owner of 131 Speers Road), and Oakville Developments (2010) Inc. (owner of 550 Kerr Street) (together known as the "landowners"). BA Group prepared a report entitled "Upper Kerr Village, Part 2 Transportation Assessment – Official Plan Amendment – Transportation Considerations Report", dated February 2 2022 (referred to herein as the February 2022 TIS Report). That report supported an Official Plan Amendment (OPA) to permit the redevelopment and intensification of lands municipally addressed 530, 550 and 580 Kerr Street, 131 and 171 Speers Road (together know as the "Subject Site" and that forms a portion of what is referred to as the Upper Kerr Village District) in the Town of Oakville (the "Town"), Halton Region (the "Region").

The February 2022 TIS Report was submitted to the Town of Oakville and preliminary comments were recently received from Town staff. This included comments from the transportation staff, planning staff and emergency services staff.

In addition to the recent Town staff comments on the February 2022 TIS Report, an announcement by Metrolinx in March 2022 confirmed that the planned Kerr Street Underpass project that would create a grade-separated rail-road condition along Kerr Street, north of Speers Road would be indefinitely postponed; however, not cancelled. In response to the Metrolinx announcement, Town of Oakville staff requested additional analyses to investigate the implications of the underpass deferral on the above referenced OPA to permit redevelopment and intensification of the Subject Site.

In light of these two recent developments (preliminary Town comments on the February 2022 TIS Report and the Metrolinx announcement and Town request for additional analyses), the February 2022 TIS Report is being updated to address both. This May 2022 Revised TIS Report incorporates responses to the Town's preliminary comments and the implications of the deferred Kerr Street Underpass project on the OPA Lands. Both the preliminary Town comments (April, 25 2022 email correspondence) and the request for additional analyses related to the deferral of the Kerr Street Underpass project (April 7 2022 email correspondence) are contained in **Appendix A**.

1.2 PROPOSED OPA CONTEXT

The portion of the Upper Kerr Village District that forms the subject OPA (referred to herein as the Subject Site) is bounded by Speers Road on the south, Kerr Street on the east, the CN Rail corridor on the north, and the west limit of the property known municipally as 171 Speers Road (See **Appendix B, Schedule O1**, the lands north of Speers Road and west of Kerr Street and **Figure 1**, **Site Context Plan**). The owners of the property at 171 Speers Road are not a direct party to the OPA submission; however, further to Official Plan policies, their lands have been considered in the Comprehensive Development Plan (Proposal) and its proposed future development structure. The involvement of the lands at 171 Speers Road is addressed in **Section 5.2.3, Phasing Implications Associated with 171 Speers Road** as well as in the traffic operations assessment portion of **Section 8.0, Network Capacity Analyses**.

The Proposal and its implementing OPA will permit the intensification of the Subject Site. The intensification characteristics are set out in the Draft OPA and associated Schedules prepared by Urban Strategies Inc. as resubmitted in May 2022. The Draft OPA provisions incorporate the goals, objectives and policies set out in Part E – Growth Areas, Special Policy Areas and Exceptions, Kerr Village (See Appendix C) when establishing the intensification parameters for the overall Block and individual properties. Table 1 sets out what the Draft OPA will generally permit in terms of the overall intensification across the Subject Site and on individual properties.

TABLE 1 **OVERALL DEVELOPMENT POTENTIAL ACROSS THE SUBJECT SITE**

Site by Property	Area	Residential Units	Retail GFA (m²)
588 Kerr St	Area A	428	923
550 Kerr St	Area B	428	1,941
530 Kerr St & 131 Speers Rd	Area C	516	4,071
171 Speers Rd	Area D	470	980
TOTAL		1,842 (rounded to 1,850 units)	7,915

Source: USI Land Use estimates based upon Draft OPA provisions, Revised May 2022

The Draft OPA and associated intensification levels take into consideration the approved grade separation of Kerr Street and the CN Rail corridor when establishing the resulting land areas associated with future intensification. The Kerr Street grade separation involves a realignment of Kerr Street that includes a shift in the horizontal alignment of Kerr Street to the west starting approximately half way between Speers Road and Shepherd Road and extending north beneath the CN Rail corridor where it rejoins the existing alignment of Kerr approximately half way between the CN Rail corridor and Wyecroft Road. The effect of this Kerr Street grade separation is a reduction in the developable lands on a portion of the existing Subject Site.

The assessment also takes in to consideration the planned improvements to Speers Road within the study area as set out in the Environmental Study Report completed by Delcan in September 2009. Based upon the evaluation of the alternative solutions, the preferred planning solution for the Speers Road corridor was identified as follows: Increase traffic capacity along Speers Road through the addition of through / turn lanes and help alleviate congestion through the accommodation of transit users, cyclists, and pedestrians and the implementation of non-structural improvements including better signage and traffic control. In the subject study area, the effect of this preferred solution involved a shift of the north curb line of Speers Road to the north to accommodate the increased width of curb-to-curb dimension and the introduction of bicycle lanes along Speers Road, an eastbound right turn lane as well as dual southbound left turn lanes and a dedicated southbound right turn lane, and, bicycle lanes on Kerr Street, north of Speers Road.

The Draft OPA and associated intensification levels also take into account the introduction of the new public and private streets across the Subject Site as well as the introduction of a public park and public square within the Subject Site.

Shepherd Road is to be extended west of Kerr Street to a point where it would connect with the northerly extension of St. Augustine Drive. The resulting public street would be a continuous public street with signalized connections at Kerr Street and at Speers Road.

The public park is planned to be centrally located within the Subject Site and be 1 acre (4.037 square metres) in area. A public square is planned to be located at the northwest corner of Speers Road and Kerr Street.

A private street is planned to wrap around the public park on its east and south sides creating an opportunity to provide access to development parcels that would front onto Speers Road and Kerr Street and offer an opportunity for mid-block pedestrian connections between Speers Road and Kerr Street and the planned street network within the Subject Site. The planned park and the private street can be configured in such a way to support a phased introduction of both, in response to the timing of development on the 171 Speers Road lands. This ensures that the lands that front onto Kerr Street could proceed with development and support the mobility and functional design needs of development on those properties independent of the potential for intensification on the 171 Speers lands. This arrangement forms the "Ultimate" scenario in the assessment of the operational conditions along public streets within the Study Area as assessed in **Section 8.0** of this report.

A second scenario is also assessed in Section 8.0 of this report; it is referred to as the "Interim" scenario. This scenario assumes that the 171 Speers Road property does NOT redevelop. As a consequence, the north-south segment of the private street described above would be initially connected to Speers Road at a right-in/right-out unsignalized intersection offering a phased introduction of a street network that can respond to the collective needs of development (from both accessibility and circulation perspectives), prior to the 171 Speers Road property being redeveloped. The park configuration would be altered to achieve a larger park area during the Interim scenario.

These public and private streets and public park and squares are illustrated on the Schedules to the Draft OPA as resubmitted in May 2022.

This revised report is an update to the Part 2. February 2022 TIS of the complete set of transportation assessments that will provide support for the Comprehensive development Plan and Draft OPA provisions. The Part 1 report, submitted to the Town of Oakville in November of 2021, was a high-level overview of the transportation considerations relevant to the Subject Site. This revised Part 2 May 20022 TIS report of the transportation assessment goes on to consider the implications of the associated intensification of the Subject Site in detail and provide an analytical assessment of the travel demands, impacts, and mitigation measures, if any, required to support the Draft OPA provisions. It also addresses preliminary comments from the Town of Oakville staff and the implications of the Metrolinx deferral of the Kerr Street Underpass project per comments from Town of Oakville staff.

The following sections of the revised Part 2 May 2022 Transportation Assessment report incorporate the Part 1 sections for context and add sections that address the analytical assessment of traffic operations associated with the introduction of the Upper Kerr Village intensification outlined in the Draft OPA provisions and the review of the Metrolinx deferral of the Kerr Street Underpass project. The Part 2 May 2022 TIS report presents a summary of the following:

A description of the Existing Site, Surrounding Area and Development Proposal;

- Area Transportation Context;
- Relevant Policies of Key Planning Documents;
- Transportation Justification for Intensification within the Upper Kerr Village Area;
- A review of the Draft OPA development characteristics from various Frames of Reference the Site, Site Phasing, the Local Area, and Regional Level;
- A summary of the analysis parameters adopted herein;
- A summary of the public street network capacity analyses,
- Review of the Implications of the Metrolinx Deferral of the Kerr Street Underpass Project; and,
- Summary and Conclusions

2.0 SITE AND DEVELOPMENT PROPOSAL CONTEXT

2.1 EXISTING SITE

The Existing Subject Site currently exhibits a range of retail / entertainment uses across the existing properties. The 171 Speers Road property includes an existing cinema use and what was a mixture of retail businesses, personal service businesses and institutional uses (adult learning centre). The balance of the Subject Site, that portion that fronts onto Kerr Street and a portion of Speers Road, operates like a homogeneous retail plaza with what is configured as retail gross floor area (GFA) situated along the west side of the Subject Site, service areas on the west side of the retail GFA and a conventional shared parking area between the retail GFA and Kerr Street.

In total the existing GFA associated with each of the properties include:

- The 171 Speers Road property is approximately 4,700 square metres (50,600 square feet) of GFA.
- 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr has approximately 11,724 square metres (126,200 square feet) of GFA.
- The total existing commercial GFA across the Subject Site is approximately 16,424 square metres (176,800 square feet) of GFA.

The existing 171 Speers Road property acts as a separate parcel in terms of vehicular access and circulation. The balance of the Subject Site (including 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr) acts as a contiguous parcel of land with two (2) access driveways from Speers Road and two (2) access driveways from Kerr Street. None of the existing access driveways are signalized.

The lands inclusive of 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr have mutual cross-easements on title of each individual property that afford each parcel equal rights of access and circulation. The easements are mutually binding and all property owners must agree to any modifications to the easements. This effectively ensures that there will always be the ability to navigate across each property and use any access point to access or egress any parcel of land within this portion of the Subject Site.

The approved grade separation of Kerr Street and the CN Rail corridor will have the effect of shifting the horizontal alignment of Kerr Street to the west starting approximately half way between Speers Road and Shepherd Road and extending north beneath the CN Rail corridor where it rejoins the existing alignment of Kerr approximately half way between the CN Rail corridor and Wyecroft Road. This realignment will reduce the future developable lands on a portion of the Subject Site and eliminate approximately 4,350 square feet of GFA (an existing outparcel building at the north end of the Subject Site). It will also reconfigure access to the Subject Site (the portion including 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr) in such a way that the existing northerly unsignalized access driveway would be eliminated and replaced with a signalized access opposite Shepherd Road. The reconfigured access will also result in a reconfiguration of the parking layout and circulation around the new signalized access given the grading required to match the new (lower) elevations along Kerr Street post grade-separation. **Appendix E** contains the 30% design plans for the Kerr Street Grade Separation Proposed Road Improvements.

The grade-separation also results in a reconfiguration of the property boundaries along Kerr Street, especially for lands associated with 550 Kerr and 588 Kerr.

Service vehicle access to the rear of the retail GFA on the lands associated with 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr would not be affected by the Kerr Street realignment.

The planned Speers Road improvements identified in the Speers Road Environmental Study Report would impact the 131 Speers Road property with the planned widening to accommodate the bicycle lanes and the introduction of the eastbound right turn lane on Speers Road at Kerr Street. Minor impacts to the south side of the existing Speers Road would also occur as a result of the planned full widening of Speers Road in this area.

2.2 SURROUNDING AREA

Generally speaking, the Subject Site is bounded by the following land use areas:

- to the west by Employment Area lands,
- to the south by Residential Area lands (generally single detached housing),
- on the immediate south side of Speers Road, west of Kerr Street by Main Street and Urban Centre lands.
- to the east of Kerr Street by Urban Core, Urban Centre and Main Street lands within the Upper Kerr Village area,
- to the south, east of Kerr Street and along the south side of Speers Road High Density lands and further to the south Residential Areas (generally single detached housing forms),
- to the **north** by the CN Rail corridor and Employment Areas further north,
- to the northeast by Natural Heritage System lands, and,
- lastly, to the east beyond the Upper Kerr Village Growth Area, by the Midtown Growth Area and the Oakville GO Station.

This is illustrated within the aerial photography presented in **Figure 1**.

From a mobility perspective, the surrounding areas offer a diverse set of destinations and relationships that would support intensification within the Subject Site:

- Employment areas offer opportunities to reduce the distance between home and work trips,
- Residential and main street uses offer mid-day destinations for residential land uses;
- Institutional uses within the residential areas offer school and local activity trips within convenience walking and cycling distances;
- Natural Heritage Systems offer recreational opportunities;
- Midtown Oakville offers both destinations unto itself for residents of the Subject Site, but more importantly it is a mobility hub; the Midtown Oakville area is a Major Transit Station Area (MTSA) offering a transit hub for both local and regional transit services.

The Subject Site is conveniently located proximate to the Queen Elizabeth Way (QEW) / Highway 403 corridor, linking the Upper Kerr Village Growth Area with destinations east (the Greater Toronto Area) and west (Greater Hamilton Area) of Oakville.



FIGURE 1: SITE CONTEXT PLAN – UPPER KERR VILLAGE SUBJECT SITE

2.3 DRAFT OPA AND COMPREHENSIVE DEVELOPMENT PLAN

As noted in **Table 1** above, the Draft OPA for the Subject Site will permit approximately 192,000 square metres of total GFA. This breaks down into approximately 171,300 square metres of residential GFA and 7,915 square metres of retail GFA, having taken into consideration floor area associated with above grade parking allowances. Net Floor Area (NFI) within the Draft OPA is 163,150 square metres or approximately 3.4 FSI. The Draft OPA as resubmitted in May 2022 for the Subject Site considered herein reflects input from the Town of Oakville staff and the general public relative to the November Draft OPA which formed the subject of the February 2022 TIS. This input has resulted in a shifting of the density (height of buildings) permitted in the Draft OPA across the Site to achieve a more desired urban design and set of planning related objectives. This is outlined in more detail in the supporting revised urban design brief prepared by Urban Strategies Inc. (USI).

For the purposes of the transportation assessment this translates into approximately 1,842 residential units. The Livable Oakville policies strongly recommend that a grocery store be retained within the Subject Site as the lands are redeveloped. The Comprehensive Development Plan for the Subject Site as contemplated within the Draft OPA makes provision for the retention of key retail uses towards the Speers Road/Kerr Street intersection. This would place the retail GFA strategically near transit services and the surrounding communities. The urban structure of the Draft OPA also allows for appropriate accessibility to such uses both from an Active Transportation perspective (pedestrian and cycling accessibility both from within the Subject Site but also from the adjacent Kerr Street and Speers Road frontages) and from a service vehicle perspective – providing important support for the retail viability.

The Draft OPA also includes important policies relevant to Streets and Parking in Section 1e. Subsections i., ii, and iv address the public street extensions of Shepherd and St. Augustine Drive, introduction of a private local street within the Subject Site, and the ability to park vehicles below-grade beneath the proposed public park and private street, respectively. These are addressed in more detail below.

The structure of the mobility elements of the Subject Site includes important internal and external linkages for all modes which are consistent with the Livable Oakville Policies and guidance contained in the supporting transportation (Kerr Village Transportation Assessment, 2009) and planning (The Plan for Kerr Village, 2009) documents originally conducted in support of intensification of Kerr Village.

The extension of Shepherd Road and St. Augustine Drive into the Subject Site provides strategic accessibility for both motor vehicles (private auto, service vehicle and emergency vehicles) and for pedestrian and cycling modes also. It also offers additional network flexibility (alternative connections to both Kerr Street and to Speers Road) to ensure that existing traffic patterns in the area are not unduly burdened by the planned intensification. The introduction of a private street within the Subject Site ensures that accessibility to resulting development parcels fronting along Kerr Street and along Speers Road can be accessed within introducing unnecessary driveway connections to the arterial streets.

The private street proposed internally to the Subject Site also serves to frame the public park proposed centrally located within the Subject Site.

The Draft OPA permits the ability to construct beneath the private street and the public park to provide flexibility when designing the Site Plans associated with individual development parcels. This will have the effect of providing the following benefits to the proposed intensification:

- Public Easements would be granted in favour of the Town of Oakville permitting the use of the private Local Street by the general motoring public. The private street would "appear" (at-grade) to be public given they would be designed to surface public street standards having appropriate operating design criteria (i.e., design and posted speeds and corresponding horizontal and vertical design criteria). Easements would also obligate the owners of the Private Streets to maintain them to a minimum standard that would equal public ownership conditions to ensure they retain their intended role in the overall Draft OPA street network;
- The Private Street ownership better facilitates the ability to locate parking beneath the Private Local Street ROW. There is significantly less complexity in the strata ownership arrangements that result from Private ownership. Similarly, the liability associated with the ability to locate parking beneath a Private Street is more manageable relative to the same arrangements beneath a Public Street:
- Being able to park beneath the private Local Street will enable a more efficient and more cost effective below-grade parking garage layout for development blocks, benefitting the overall costs associated with the developments:
- A Private Local Street will better facilitate potential below-grade pedestrian and service connections within the individual developments.
- o Phasing of development can be more flexible given the planned introduction of the public park and the uncertainty associated with the timing of the 171 Speers Road property and the now deferral of the Kerr Street Underpass project by Metrolinx.
 - o The private street could be initially connected to Speers Road offering a phased introduction of a street network that can respond to the collective needs of development (from both accessibility and circulation perspectives), prior to the 171 Speers Road property being redeveloped and in response to the deferral of the Kerr Street Underpass project by Metrolinx (however, there are corollary limiting factors as a result – see Section 10.0 here for more
 - o Implementing segments of the Private Street given an overall street network plan to work towards - would be more efficiently and cost effectively undertaken given flexibility of the private Local Street.
 - o Ability to provide effective Emergency Vehicle access under early phases of development to meet the requirements of the Ontario Building Code and the requirements of the Emergency Services of the Town of Oakville (Fire Services) and the Region of Halton (Ambulance/Paramedic Services).
- Cost effectiveness for the Municipality Long term maintenance of the Private Street would lessen the financial obligations of the Municipality and link them to the planned development;

- Private Local Street designation would permit a more flexible design and construction of key civil and structural elements associated with the ROW while maintaining appropriate engineering and urban design requirements; and,
- The private Local Street could also facilitate a more flexible and higher standard of urban design and maintenance program to be implemented along the Private Street ROW.

The combination of the public and private street network will also provide flexibility for individual development parcels to locate and coordinate placement of driveway accesses to parking garage elements (above or below grade), to service vehicle areas and to ensure emergency vehicle access is appropriately provided. The design of the public and private street rights-of-way at 20 metres and 18 metres, respectively, will facilitate on-street parking strategically located relative to intersections, driveways and building and park frontages.

Subsection iii of the Draft OPA addresses vehicular parking. A reduced parking ratio should be encouraged to support Provincial, Regional and Municipal policy objectives for increasing transit use and active transportation in Kerr Village, supporting intensification within the Growth Area, achieving environmental objectives and benefits, and supporting area transportation infrastructure investment. Reduced parking ratios will be established at the development application stage.

Reducing vehicular parking standards within the Upper Kerr Village area is a fundamental element of the Transportation Demand Management (TDM) measures that would be considered along with any development application within the Subject Site. It also goes hand in hand with the inclusion of such TDM measures as Car Share facilities and memberships, the concept of bike share facilities (whether public or privately implemented), enhanced cycling infrastructure on-site, enhanced connections between development and the public realm (walkways and pathways provide as direct a connection to public transit facilities and public sidewalks and cycling infrastructure as possible/practical), pick-up and drop-off facilities to support shared ride services (Uber and Lyft, etc.) and parcel delivery, and transit pass incentives.

Justification of parking reductions should be assessed at the Zoning development application stage and evaluated within the context of the supporting infrastructure, programs, and facilities that encourage non-auto travel modes, lower vehicular ownership patterns and support mobility infrastructure investment in the area.

3.0 AREA TRANSPORTATION CONTEXT

3.1 PUBLIC STREET NETWORK

The existing area public street network context is illustrated in Figure 1. Figure 2 illustrates the existing lane configurations and traffic control within the study area assessed. Figure 3 illustrates the planned lane configurations and traffic control within the study area based upon 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report, the Kerr Street Grade Separation Proposed Road Improvements and the proposed Draft OPA provisions.

A summary of the existing and planned street network follows:

- Both Speers Road and Kerr Street are Town of Oakville streets and both are considered Major Transportation Corridors according to the Livable Oakville Urban Structure.
- Both corridors provide strategic connections within the Town of Oakville, connecting to other key Town of Oakville Major Transportation Corridors as well as Regional Roads.
- As part of the 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report and the Kerr Street Grade Separation Proposed Road Improvements, improvements in the immediate vicinity of the Upper Kerr Village area were identified for implementation in conjunction with development (intensification) and regional rail service upgrades within the Kerr Village Growth Area:
 - Kerr Street given the grade separation planned for Kerr Street, Kerr will have two through lanes in each direction plus left & right turn lanes at a new signalized intersection at Shepherd;
 - Kerr Street was identified with dual southbound left turn lanes at Speers Road and a dedicated southbound through lane and a dedicated southbound right turn lane;
 - Speers Road was identified as requiring an eastbound right turn lane in addition to the current lane configurations; and,
 - Speers Road was identified as requiring bicycle lanes along its length –to east of Kerr Street.
- Speers Road is also identified:
 - As a Priority Transit Corridor (Mobility Management Strategy Halton Region);
 - With Transit in semi-exclusive/exclusive right-of-way (Transportation Master Plan Halton Region); and
 - As a Multi-purpose Arterial (Liveable Oakville)

These improvements and designations were identified within the context of the planned intensification associated with the overall Kerr Village Growth Area. Appendix D illustrates the recommended public street improvements (Figure 5.6) per the 2009 Kerr Village Transportation Assessment conducted by Urban & Environmental Management Inc. on behalf of the Town of Oakville as well as the Preferred Design (Morden Road to Speers Road) from the 2009 Speers Road Environmental Study Report. Appendix E contains the 30% design plans for the Kerr Street Grade Separation Proposed Road Improvements.

The introduction of the Shepherd Road and St. Augustine Drive extensions – referred to earlier – will augment the existing public street system by linking Kerr Street and Speers Road and offering both intensification related vehicular traffic as well existing corridor related traffic volumes relief from existing busy junctions in the immediate area.

3.2 PUBLIC TRANSIT NETWORK

The existing public transit system within the vicinity of the Upper Kerr Village is illustrated in **Appendix F**.

Existing routes passing directly by the Subject Site include the following Oakville Transit routes:

- Route 4 Speers Cornwall with 30 Minutes headways during peak periods
- Route 14 and 14A Lakeshore West each has 30 minute and 50 minute headways individually. combined they have the effect of 15 minute headways between the Subject Site and the Oakville GO stations during peak periods
- Route 15 Bridge with 30 Minutes headways during peak periods\
- Route 18 Glen Abbey South with 30 Minutes headways during peak periods
- Route 28 Glen Abbey North with 30 Minutes headways during peak periods
- Route 10 West Industrial 30 Minutes headways during peak periods only

The Subject Site is in the enviable position of being at the convergence of 5 Oakville Transit routes that all lead to the Oakville GO Station. For transit trips facilitating commuting to the Oakville GO station, the combined headways of all 5 routes produce effective headways that result in only minutes between routes arriving at the Speers and Kerr intersection. Commuting connections to GO Transit Rail and bus service is centralized at the Oakville GO Station in Mid-town (only 900+/- m to the east) for convenient transfers.

For transit trips destined to other areas of the Town, the Speers and Kerr junction is an extremely convenient focal point that offers residents, guests/visitors, retail patrons and employees a high degree of accessibility.

Existing transit stops are located on either side of Kerr Street at Shepherd Road, on the south side of Speers Road at Kerr Street, and the north side of Speers Road approximately 100m west of Kerr Street. The Kerr Street grade separation includes an improvement to the west side bus stop at Shepherd Road. Staff have indicated that the north side bus stop on Speers Road should be located further west to the future intersection of St. Augustine Drive. Furthermore, Oakville Transit staff advise that real estate should be reserved for transit stop and passenger amenities at these locations.

In addition to regular Oakville Transit conventional transit service, an accessible transit service called care-Avan provides door-to-door transportation for persons with disabilities. Anyone unable to use conventional transit service due to their disability is eligible to apply. The service operates within Oakville Transit's operation hours and is available 7 days a week.

Also offered in Oakville is the "on-Demand" transit service generally suited to areas where regular transit service is not the most efficient means of providing public transit service. Given the nature of On-Demand transit, and the concentrated 'origins' that an intensified Upper Kerr Village area will offer, On-Demand transit could link Upper Kerr with other "concentrated" destinations within the Town that could serve as a supplemental transit option for residents.

The Kerr Village Transportation Assessment (2009) and The Plan for Kerr Village (2009) both acknowledge that existing public transit and future enhanced public transit will play a significant role in meeting the travel needs of Kerr Village based upon the planned intensification.

As part of the Transportation Demand Management plans that will form part of the mobility strategy for development within Upper Kerr Village, enhanced connections between the development within Upper Kerr Village and the public street frontages should be mandated to provide high quality, convenient and safe pedestrian and cycling connections to public transit stops and municipal cycling facilities.

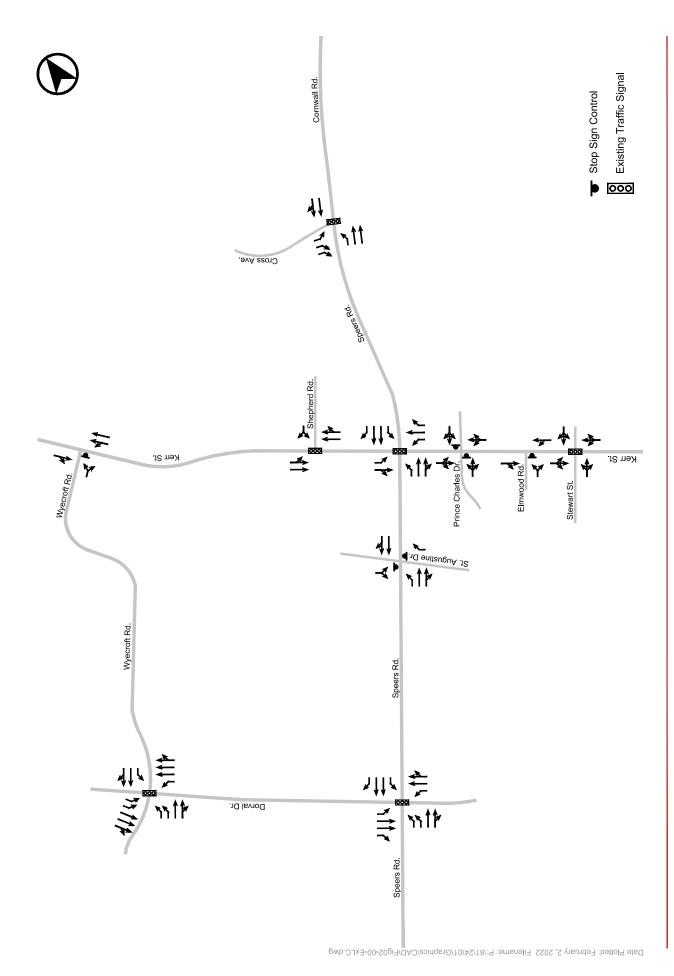


FIGURE 2 EXISTING LANE CONFIGURATION AND TRAFFIC CONTROL

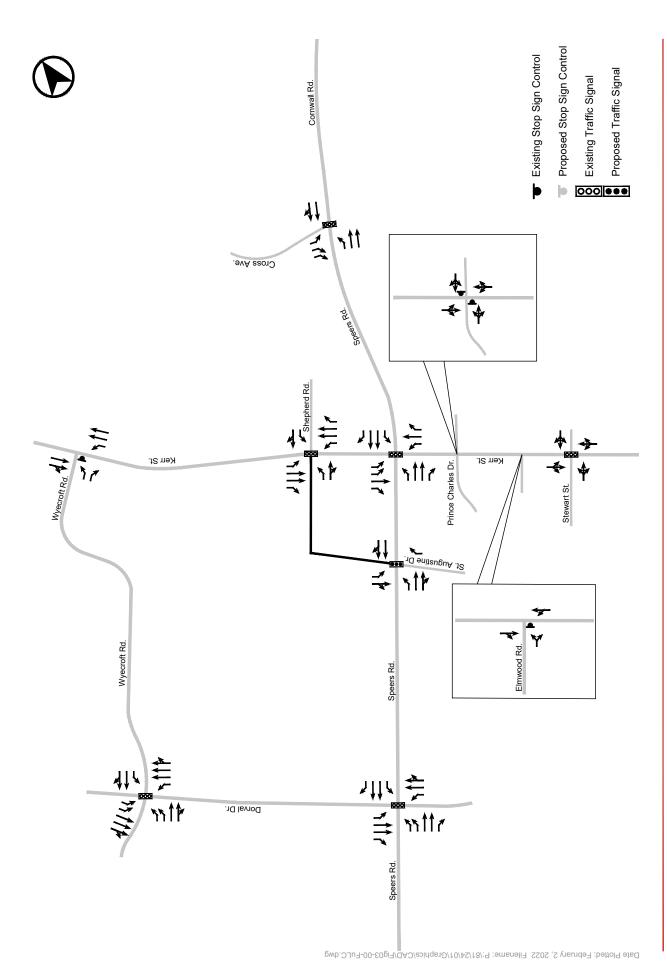


FIGURE 3 PLANNED LANE CONFIGURATION AND TRAFFIC CONTROL

3.3 **ACTIVE TRANSPORTATION NETWORK**

Appendix G presents the Existing, Previously Proposed and Candidate Pedestrians and Cycling Routes within the Town of Oakville.

All public streets bordering the Subject Site have sidewalks provided on both sides of the streets. Where newer development (NE corner of Speers and Kerr) has already occurred improved pedestrian facilities have been implemented.

There are presently no existing dedicated cycling facilities along either Speers or Kerr corridors.

Both Speers (buffered Bike Lanes) and Kerr (Bike Lanes from Speers to the north) and Shepherd Road (Bike Lanes to the south) are identified to have dedicated cycling facilities along their lengths. Kerr Street is planned to have "super sharrows" from Speers Road to Lakeshore Road.

These facilities will offer connections through the Town and to key daily destinations. These types of facilities assist in providing the "first mile / last mile" facilities that support and encourage non-auto modes of travel for commuting and for daily trip making. This is especially true when a MTSA (Oakville GO Station) is situated some 900+ metres to the east and employment and community retail areas are approximately 1.5 km to the west and northwest, resulting in a cycling trips that is less than 5 minutes and between 5 and 10 minutes, respectively.

4.0 RELEVANT PLANNING DOCUMENTS

4.1 PROVINCIAL PLANNING DOCUMENTS

The Provincial Policy Statement (PPS 2020) is issued under the authority of Section 3 of the Planning Act. It provides direction on matters of provincial interest related to land use planning and development, and promotes the provincial "policy-led" planning system.

With respect to transportation systems, Part V of the PPS, through the Policies in Section 1.6.7, promote maintaining and improving connectivity within and among transportation systems and modes (1.6.7.3) as well as a land use pattern, density and mix of uses that minimize the length and number of vehicle trips and support the development of viable choices and plans for public transit and other alternative transportation modes, including commuter rail and bus (1.6.7.4).

In addition, the PPS in Policy 1.6.8.3 indicates that planning authorities shall not permit development in planned corridors that could preclude or negatively affect the use of the corridor for the purpose(s) for which it was identified.

The Growth Plan for the Greater Golden Horseshoe (2019) provides a framework for implementing the Government of Ontario's vision for building stronger, prosperous communities within the Greater Golden Horseshoe by better managing growth.

The Plan directs growth within the Greater Golden Horseshoe area to the existing urban areas in order to make better use of land and infrastructure. Concentrating intensification in these areas provides a focus for a transit and infrastructure investment to support growth.

The Growth Plan, through policies in Section 3.2.2, supports a transportation system that exhibits connectivity amongst modes, a balance of modal choices for users of the system ensuring walking, cycling and transit are promoted, sustainability (i.e., economical and environmentally appropriate), multi-modal choices for all trip types to satisfy their travel needs, and is safe. Furthermore, the Growth Plan directs Transportation Demand Management (TDM) policies to be adopted by municipalities towards reducing trip distance and time and increasing modal share to alternatives to the automobile.

4.2 RELEVANT POLICIES OF THE TOWN OF OAKVILLE OFFICIAL PLAN - LIVABLE OAKVILLE

4.2.1 Livable Oakville - Growth Areas - Kerr Village

The Upper Kerr Village District is envisioned as a higher density, transit-supportive, mixed use area. This district will include gateway features, urban park with pedestrian midblock connections and establish a mix of commercial and residential uses.

Within Livable Oakville, Part E – Growth Areas, Kerr Village, there are a number of relevant policies that support the intensification of the Upper Kerr Village and that speak directly to the mobility needs and requirements, supporting land use policies (internalization of trip making), and phasing necessary to fulfill those goals and objectives and that have ben incorporated into the Draft OPA document prepared by Urban Strategies Inc.

Policy 23.2.2 states that:

Objectives

Enhance the mobility of all users with the provision of transit priority measures and increase levels of service through the development process by:

- a) promoting pedestrian and cycling-oriented mixed use development, with improved connections to the Downtown as well as the GO train station and proposed employment hub in Midtown Oakville;
- b) improving circulation, connections and access for cyclists, pedestrians and public transit; and,
- c) increasing efficiencies for alternate modes of transportation by encouraging compact urban form.

Policy 23.3.1 states in part that:

Development Concept

Upper Kerr Village District

The Upper Kerr Village District will become a transit-supportive and mixed use area. Higher density forms of development are permitted to achieve the critical mass required for enhanced transit.

Policy 23.4.1 states that:

Functional Policies

Transportation

a) The Town will introduce transit service improvements at an early stage in the development of Upper Kerr Village District. As the revitalization of this district evolves it will be serviced by the extension of improved transit levels of service, including transit priority measures and infrastructure required to create an efficient and attractive transit environment.

- b) Through the development process, attractive transit environments are encouraged to include transit passenger amenities, minimal surface parking, and other travel demand management strategies to encourage transit ridership.
- d) Bicycle facilities are encouraged throughout Kerr Village with the appropriate signage and infrastructure such as bicycle racks and bicycle lockers.
- e) The feasibility of creating a new or improved east-west pedestrian/cycling connection across Sixteen Mile Creek in the general area of the QEW/Speers Road shall be investigated by the Town.
- f) The redevelopment of Upper Kerr Village District shall anticipate the westerly extension of Shepherd Road and the northerly extension of St. Augustine Drive, with regard for potential redevelopment of adjacent lands.

Policy 23.6.2 states that:

Land Use policies

The maintenance of a food store in any redevelopment of lands within the Urban Core designation shall be encouraged.

Policy 23.8.1 states that:

Implementation Policies

Phasing / Transition

- a) Development will likely occur gradually over the long-term and be co-ordinated with the provision of infrastructure, including:
 - i) transit;
 - ii) transportation improvements;
 - v) pedestrian and cycling facilities;

4.3 RELEVANT TECHNICAL / PLANNING DOCUMENTS

4.3.1 **Kerr Village Transportation Assessment (2009)**

This technical document prepared by Urban & Environmental Management (UEM) provided the basis of the transportation support for the proposed development intensities found within The Plan for Kerr Village (2009), the planning document that describes the selected development scenario for Kerr Village and the Upper Kerr Village component.

The purpose of the assessment was to evaluate the ability of the Town's Capital Forecast Program, the 5 Year Transit Service Plan and other studies that recommend infrastructure improvements for Kerr Village to determine the opportunities and constraints of achieving the three growth scenarios developed by Planning staff.

The Transportation Assessment was different from the other Traffic Study in its approach in defining

residential and commercial/retail/office uses allowing for more specific trip generation and assignment analysis. In addition, the assessment gave greater allowance in forecasting longer-term modal shares within the Village and evaluating critical road network improvements for automobile use and transit. The analysis was based on accommodating a development cap of approximately 2,100 new residential units and 24,000 square metres of commercial/retail/office space. The assessment concluded with recommendations regarding infrastructure improvements, suggested alternatives to mitigate impacts, corridor/EA studies, and what changes in travel mode patterns would be required to defer infrastructure improvements.

Approximately 78% of the planned residential intensification (approximately 1,765 units of a total of 2,265 units) was targeted for the Upper Kerr Village portion of Kerr Village. The 2009 Transportation Assessment also accounted for approximately 24,100 square metres of commercial leasable area within the Upper Kerr Village area.

Of note, relative to the intensification accounted for within the 2009 Transportation Assessment, the Draft OPA would result in an additional approximately 940 residential units and a reduction of some 13,700 square metres of commercial leasable area within the Upper Kerr Village area.

As noted in the Introduction of this report, the current Draft OPA transportation assessment considers the implications the intensification, as permitted in the current Draft OPA within the Subject Site, and provides an analytical assessment of the travel demands, impacts, and mitigation measures, if any, required to support the current Draft OPA provisions.

4.3.2 The Plan for Kerr Village (2009)

The *Plan for Kerr Village (2009)* provides a framework of land use designations and policy tools to guide the revitalization of the Kerr Village community.

Within The Plan for Kerr Village (2009) there are seven considerations relating to revitalization:

- Effectively using existing infrastructure such as roads, water and wastewater services;
- Providing a wide range of housing choices closer to amenities, increasing convenience and reducing travel time:
- Improving infrastructure such as sidewalks and streets;
- Supporting new public assets such as parks, open space, civic buildings, libraries and community centres, as well as programs and services;
- Protecting the environment;
- Promoting the demand for walking and cycling;
- Promoting the demand for transit by improving levels of transit service, reducing the use of the private automobile and relieving traffic and congestion; and,
- Accommodating growth in appropriate places and curbing sprawl.

Based upon stakeholder input, planning principles and technical analyses, a development scenario was established that included the following parameters:

- Existing development levels (2009) 2,600 residential units and 19,900 square metres of commercial space
- Approved but not yet built development (2009) 352 residential units and 417 square metres of commercial development;

- Proposed New (additional) Development (from 2009) 2,100 residential units and 24,000 square metres of commercial development;
- With Bonusing (additional) New Unit threshold (from 2009) 2,300 residential units

This development intensification was supported by the 2009 Transportation Assessment and its recommended transportation improvements/conditions.

HIGH-LEVEL JUSTIFICATION FOR INTENSIFICATION 5.0 WITHIN UPPER KERR VILLAGE

The Upper Kerr Village is an excellent location to support intensification within the Town of Oakville. The following high-level bullet points summarize the key rationale for the proposed Draft OPA development levels:

- Upper Kerr Village is a designated secondary Growth Area within the Town of Oakville mandate is to promote their development as mixed use centres with viable main streets. Livable Oakville notes that Kerr Village has been the subject of detailed, comprehensive land use studies which have resulted in objectives and policies to provide for growth opportunities.
- Substantial Municipal/Regional/Provincial mobility infrastructure investment within general vicinity of Upper Kerr Village and within nearby Mid-Town
 - Speers Road and Kerr Street public street network improvements substantially improved multimodal connectivity;
 - Municipal investments along Speers Road/Cornwall corridors and in near-by Mid-Town (Trafalgar BRT corridor) - establishing foundational network elements of higher order transit systems
 - Trafalgar Road identified as Transit Priority Corridor -Mid-town to Georgetown;
 - Speers Road As a Priority Transit Corridor (Mobility Management Strategy Halton Region); With Transit in semi-exclusive/exclusive right-of-way (Transportation Master Plan – Halton Region); and As a Multi-purpose Arterial (Liveable Oakville)
 - o Provincial (Metrolinx) investment in Mid-Town referred to as an Anchor Hub or Mobility Hub providing a nearby enhanced Transit Hub:
 - Regional Express Rail (RER) service / Regional Rail service;
 - GO Bus service:
 - Integration with Local Oakville Transit (Mid-Town is the busiest Transit Hub in Oakville)

Proximity of Upper Kerr Village to existing and planned multi-modal infrastructure

- o Upper Kerr Village's compact area and supporting (existing and proposed) public street network provides a dense, urban street grid well suited for both pedestrian and cycling modes of travel.
- o This proposed street grid will facilitate mobility and will prioritize non-auto travel within the area;
- o The mixed-use "complete community" within the Upper Kerr Village is an excellent basis for intensification serving day-to-day needs of residents, employees, visitors, and commuters.
- Internalization /efficiency of trip making is maximized.
- Intensifying the residential population of Upper Kerr Village will increase and encourage nonauto trip making for commuters and internalized O-D trips.
 - o The level of transit service serving trips destined TO and through Upper Kerr Village from elsewhere in the Town of Oakville serves as an excellent "built-in" contra-flow transit capacity for trips FROM and through Upper Kerr Village to other areas of the Town. No additional transit capacity is required to deliver this contra-flow capacity.

- Existing 'On-demand' transit services could be further enhanced given the concentrated "origins" within Upper Kerr Village when paired with "popular destinations" in the Town of Oakville.
- Micro-mobility provides an excellent option to exploit short-travel distances within Upper Kerr Village, the balance of Kerr Village and Mid-Town.
- Upper Kerr Village is an Excellent location to incorporate Reduced Vehicular Parking Rates to reduce auto-based travel:
 - o Consistent with Provincial, Regional, and Municipal mobility policies and investments;
 - One of the best Transportation Demand Management (TDM) tools to implement;
 - Reduces overall project costs for initial construction and on-going life-cycle costs of housing ownership; and,
 - o Excellent opportunity to incorporate Car Sharing/Bike Sharing and micro-mobility as a mobility alternative.

6.0 REVIEW OF DRAFT OPA DEVELOPMENT CONTEXT

A review of the Draft OPA development potential within the context of the proposed Comprehensive Development Plan and the relevant sections of policy and planning documents identified above is provided below. The review is carried out within four different perspectives or frames of reference; from the "Site Plan" scale, from a "Phasing" perspective, from the "Local Area" perspective, and from the "Regional" perspective.

The Draft OPA seeks to further intensify the Subject Site with higher density forms and building heights within the Upper Kerr Village District (requiring an Official Plan Amendment), incorporating non-residential land uses that are currently encouraged by the Livable Oakville document and existing Official Plan designations.

6.1 "SITE PLAN" SCALE PERSPECTIVE

At the "Site Plan" scale, the Draft OPA policies and its schedules permit flexibility to achieve development options within the Comprehensive Development Plan.

6.1.1 **Pedestrian and Cycling Accessibility**

Accessibility for pedestrian and cycling (active transportation) modes will be afforded significant flexibility to approach and depart the various development parcels and navigate within the Upper Kerr Village District. Short block lengths and mid-block connections (see Schedule D of the Draft OPA resubmitted in May 2022) to travel between development parcels will ensure that active transportation modes are supported and encouraged at this scale. Pedestrian facilities will be provided on both sides of all streets (public and private) within the ROW's planned (20 m ROW for the Public Street and 18 m ROW for the Private Street).

Cycling facilities will occur within shared on-street lanes within the block. The proximity of the development parcels will require only short distances be travelled before reaching dedicated cycling facilities on the busier arterial streets that frame the Upper Kerr Village District.

Bicycle parking will be encouraged to exceed the minimum number of spaces (as part of comprehensive Transportation Demand Management plan measures) and be located in a secure weather protected location for resident or long-term bike parking spaces ideally at-grade, but also below or above grade with reasonable access opportunities (e.g., elevator access, use of an appropriately design vehicular ramp, stairs with bike rails) and at-grade in a convenient and safe (ideally weather sheltered) location for visitors or short term bike parking spaces.

6.1.2 Vehicular Parking / Loading / Access & Circulation, Emergency Vehicle

Vehicular access will occur from the aforementioned public and private streets. All development related vehicular access will occur from internal streets; no access will be permitted to development parcels from either Speers Road or from Kerr Street.

On-street parking is contemplated within the public and private streets, taking into consideration proximity to intersections, driveways and front door conditions associated with individual developments.

Urban design guidelines and technical analyses associated with vehicular access operations will refine the precise positions of vehicular driveways. This will take into account the provision of service vehicle access and egress as it relates to individual development parcels. Parcels with basic residential uses and a small amount of commercial floor space will likely be able to consolidate access for service vehicles and passenger vehicles (residents and visitors) while managing on-site vehicle manoeuvring so as not to negatively impact on-site circulation, the pedestrian boulevards and on-street cycling and vehicular activity and safety.

Development parcels with greater commercial concentrations will need to rationalize on-site operations more carefully to ensure manoeuvring operations are incorporated safely and efficiently. This will likely involve some form of enclosed or segregated service vehicle loading areas for both operational, visual and noise sensitivity reasons.

Vehicular parking will be situated primarily below-grade, but above-grade parking will also be permitted provided it is screened from external view. Parking will also be permitted to occur beneath the private street and the public park. The advantages to such provision are discussed in Section 2.3 above.

The parking supply ratios associated provided for individual development parcels will be permitted to be reduced, relative to the prevailing Town of Oakville Zoning Bylaw requirements, in order to support public transit and active transportation modes. The various locational and travel attributes associated with the Upper Kerr Village District are implicitly supportive of such reductions as are the various objectives and goals as set out in the Livable Oakville - Growth Plan Area - Kerr Village policies. Furthermore, with supportive TDM plan measures, reductions in parking would be further supported.

Emergency vehicle access and circulation is essential at all phases of development. The planned public and private street network, under all phases, will be capable of providing emergency vehicle access that meets or exceeds the Ontario Building Code requirements. Phased development across the lands east of the 171 Speers Road site would initially be accessed from the Shepherd Road extension and the private N-S street that would initially connect with Speers Road. This provides a continuous set of connections to all of the buildings within the initial phases of development. Subsequent phases of development involving 171 Speers Road would see the implementation of the St. Augustine extension, connecting to the Shepherd Road extension completing the public street network, while being augmented by the private street sections that would in turn connect to both legs of the public streets (Shepherd Road and St. Augustine extensions). The initial Private Street connection to Speers would be terminated in favour of active transportation connections to Speers Road corridor. The implications on Emergency vehicle access to development phasing in light of the Metrolinx Kerr Street Underpass deferral are addressed in Section 9.0 of this revised TIS report.

6.1.3 **Broader Mixed-Use Benefits**

The Draft OPA policies will require a supportive amount of non-residential floor space within the District. These levels are will assist in offsetting some travel demand by internalizing trip-making and causing trips to be made by more efficient and less impactful travel modes; i.e., walking trips. By locating the commercial floor space towards the Speers and Kerr intersection, this will further reduce the walking and cycling distances for trips that are made from outside of the immediate Upper Kerr Village District boundaries.

Mixed use development will also provide for more efficient use (i.e., maximization) of on-site infrastructure including:

- Shared general amenity space for employees, residents, and visitors of individual parcels and the District in general;
- Shared parking supply between residential visitors and some commercial uses, particularly during evening and weekend periods;
- Vehicle servicing requirements i.e., refuse collection, general delivery, and moving needs;
- Pedestrian facilities / connections to public rights-of-way and public transit facilities.

6.1.4 Transportation Demand Management (TDM) Programs and Measures

The location of the Site and surrounding land uses greatly influences the success of a mobility plan. The purpose of the Mobility Choice Travel Plan is to guide the provision of viable alternative personal transportation options beyond the single-occupant, private automobile. This plan intends to support the proposed development by outlining Transportation Demand Management (TDM) measures and the suite of strategies under consideration to promote the use of more active and sustainable transportation modes; respond to the mobility needs of residents, employees and patrons to the Site; and to reduce the overall dependence on the private automobile.

The existing and future Site context provides for frequent public transit services along with planned cyclist and pedestrian connectivity. While strong opportunities exist in the area infrastructure to accommodate sustainable transportation practices, the ability to fully leverage these opportunities is granted by the success of the implementation of the Mobility Plan.

Four specific objectives define the policy framework for the Mobility Choice Travel Plan:

- Encourage the use of alternate travel modes (transit, cycling, walking);
- Increase vehicle occupancy;
- Shift travel to off-peak periods; and
- Reduce vehicle kilometres travelled.

A detailed Mobility Choice Travel Plan will be developed and secured through the development approvals for individual development parcels in consultation with the Town of Oakville.

6.1.4.1 **Organizational Framework**

The four broader objectives can be organized within the following categories:

- Encourage Transit Use;
- Encourage and Facilitate Bicycle Use;
- Enhance Pedestrian Access and Walkability;
- Facilitation of Reduced Car Ownership and Usage;
- Vehicular Parking Supply and Management;
- Land Use and Building Infrastructure; and
- Coordination, Communication and Promotion.

Measures from the Mobility Choice Travel Plan would be incorporated into individual development applications to minimize the need to own a personal vehicle or use an automobile when travelling to and from



the District. It is important to encourage and facilitate the use of non-automobile travel modes on a daily basis.

A summary of the Mobility Choice Travel Plan Strategies are discussed in Table 2. Further refinement of the TDM Plan would occur at the individual development application stage of the development review process. The key elements of the TDM plan are consistent with or provide what is set out in Livable Oakville and the Draft OPA.

TABLE 2 POTENTIAL MOBILITY TRAVEL PLAN STRATEGIES

LAND USE INTEGRATION

Intent:

A mixed-use development and surrounding area provides uses that allow people to meet a variety of their daily needs on and close to the Site. These locally accessible land uses provide a level of convenience and mobility choices that reduces the need to travel by private automobile.

Implementation:

- · To the extent possible, mixed use developments should maximize the nonresidential floor space within the development applications.
- There are a variety of retail, employment, entertainment, institutional, and recreational opportunities within the surrounding area.

Intent:



Support for and the promotion of the use of area transit services for both short and long-distance travel by residents, visitors and employees will reduce the overall use of a vehicle and the need to own one.

Implementation:

- The Site is within 900+ metres of the Oakville GO Station:
- The Site is within immediate proximity of five (6) existing Oakville transit routes;
- The Site is immediately adjacent to Oakville Transit bus stops that service the surface routes that run along Speers Road and Kerr Street.
- Consideration should be given to providing each new dwelling unit with a pre-paid PRESTO card for use on both Oakville Transit and GO Transit services.
- Existing On-Demand Transit Services should be considered as a routine extension to the fixed transit routes for this intensification area to serve key O-D relationships within the Town of Oakville to further reduce the reliance on the private automobile for daily trip making.
- · Consider density Bonusing/CBC may be considered in exchange for transit benefits discussions would be ratified through development application process and discussions with Town of Oakville staff.

BICYCLE FACILITIES

Intent:

Provide cycling infrastructure that supports and promotes cycling as a convenient and viable travel alternative to the personal automobile.

Implementation:

- The Site will be located in proximity to a future bike lanes along Speers Road (dedicated buffered bike lanes) and along Kerr Street (bike lanes) and Shepherd Road (bike lanes).
- · Bike parking should exceed minimum requirements as part of a comprehensive TDM multi-modal plan.
- Consideration should be given to providing locally placed Bike Share stations (either through public or private arrangements) to further enhance the area cycling facilities for the District and the area in general.
- Bike support facilities on-site bike repair stations - should be considered for each development to further enhance the cycling infrastructure and encourage cycling activity on a daily basis.
- Consider also E-bikes or E-scooters as alternative modes to be accommodated at individual developments.

Intent:



A high-quality connection between the Site and transit stops, cycling network, and public street system encourages residents, employees and visitors to travel around the Site area without a vehicle.

Implementation:

- The District gives residents, visitors and employees direct access from most development parcels and a very short walk/cycle from others to the adjacent arterial streets where transit services operate.
- These connections should be enhanced to create a better walking / cycling experience.
- · As part of the development of individual development parcels, the public sidewalks along the public and private streets should reflect – at a minimum – the minimum Town of Oakville pedestrian clearway dimensions/design standards.

NAGEMENT	A Î	Intent: Reduced parking standards within the District to encourage residents, visitors and employees to re-consider the use or ownership of a vehicle and encourage the use of public Transit and active transportation modes.	 Implementation: Shared parking principles should be taken advantage of to the fullest extent within mixed-use developments. Provide reduced resident and non-residential (i.e., shared visitor /retail) parking rates appropriate for the District circumstances – to
PARKING MANAGEMENT			 be justified on a development application basis. To the extent possible, consider charging for visitor or non-residential parking spaces. This should be evaluated on a development application basis relative to viability and offsite impacts.
CAR-SHARE		Intent: Car-share programs provide "ondemand" access to a fleet of vehicles located within the District's vicinity. The convenience and easy access reduces the need to own a personal vehicle, and also encourages the use of other non-automobile commuting methods.	 Implementation: Information should be provided to residents and employees related to the availability of area car-share options when purchasing a unit. Consideration should be given to providing each dwelling with 2-year car share membership. Provide Car-Share parking spaces (to be determined based upon individual applications) within the visitor portion of developments ideally at-grade but within the below-grade parking garage also is acceptable, to support Project mobility choices.
COORDINATION, COMMUNICATION, PROMOTION	Q	Intent: Inform, raise awareness, and actively promote non-automobile travel options for the Site.	Implementation: • An information package should be distributed to residents and employees of the Site at the time of occupancy, informing them of the variety of mobility choices available to them; highlighting the non-private automobile travel services available to the individual

DEVELOPMENT PHASING PERSPECTIVE 6.2

6.2.1 **Key Infrastructure Elements**

The key to the development phasing is ensuring that the public (extension of Shepherd and St. Augustine) and private street infrastructure is delivered coincident with the individual development parcels that 1) rely upon its presence to facilitate access and egress and 2) facilitate its introduction to contribute towards the fulsome public and private street network as set out in the Draft OPA Schedules. This also includes the

developments.



public park (or portions thereof) planned as part of the District. This is also essential for the provision of Emergency Services accessibility at all phases of development.

6.2.2 **Development Parcel Phasing Considerations**

Given the integrated nature of the existing retail operations that are located across the combination of the 131 Speers and 530 Kerr property, the 550 Kerr property and the 588 Kerr property, phasing individual development applications will be a challenge.

Existing access and circulation easements in favour of all properties across all the aforementioned properties will require careful consideration of adjacent parcel access, circulation, and parking whenever a development application is brought forward.

Given the complexity of such phasing, it would be necessary for each individual development application to assess the relative needs of the subject development application and the needs of the adjacent parcels and provide a phasing plan that:

- 1) Demonstrates no adverse impact occurs on the continued operation of remaining existing uses;
- 2) Demonstrates how the subject development application can be realized without precluding the implementation of the overall development potential outlined in the Comprehensive Development Plan; and,
- 3) Demonstrates the manner in which infrastructure and parkland will be provided.

6.2.3 Phasing Implications Associated with 171 Speers Road

The 171 Speers Road development parcel is not a direct party to the Draft OPA process, but will nevertheless be integral in delivering the fulsome set of infrastructure necessary to achieve the Comprehensive Development Plan.

As such, the phased implementation of the public and private streets as well as the public park have been considered such that an interim arrangement could be achieved that permits those portions of the Upper Kerr Village district that are located on the 131 Speers and 530 Kerr property, the 550 Kerr property and the 588 Kerr property to move forward with development.

The north-south portion of the planed private street would be extended south to intersect with Speers Road. The east-west portion of the private street would be constructed as park space in the interim, thereby maximizing the available park space and providing a "looped" street (part public and part private) to facilitate pedestrian, cycling and vehicular and Emergency vehicle circulation.

At the time 171 Speers Road move forward with a development application, the balance of the public street (the north-south portion and a short section of the east-west portion) would be realized as would the eastwest portion of the Private Street. This would also have the effect of completing the public park in the shape and size set out in the Draft OPA and completion of the private street. The segment of the private street from Speers Road to the east-west segment of the private street would be closed to vehicular traffic and accessibility would be dedicated to active transportation modes.

6.3 LOCAL AREA PERSPECTIVE

6.3.1 **Preliminary Development Travel Characteristics**

Assessment of the travel characteristics from an analytical perspective are assessed later in this report.

The analyses herein summarizes the recommended public street network configuration needed to support the Draft OPA level of intensification relative to the recommendations made in the 2009 Kerr Village Transportation Assessment and the 2009 Speers Road Environmental Study Report. The purpose of this exercise is to determine if any further or different set of transportation improvements are required to support the proposed Draft OPA levels of intensity. This assessment is found in Section 9.0 of this report.

An assessment of the implications of the Metrolinx deferral of the Kerr Street Underpass project is assessed in Section 9.0 of this report.

6.3.2 Public Accessibility - Connectivity to Public Transit, Bicycle and **Pedestrian Networks**

As noted in the Section 3.2 and 3.3 above as well as in Section 5.1, the level of accessibility afforded the Upper Kerr Village District by public transit and future cycling network elements, will be significant.

The District lies at the convergence of several Oakville Transit routes that ultimately are destined for the Oakville GO Station. This makes the District particularly accessible relative to GO Transit commuting as well for connecting to other Oakville Transit routes that provide connectivity across the Town.

The future cycling network will be well connected to support and encourage cycling as an option for both the first mile/last mile connections, but also for day-to-day trip making for residents, visitors, and employees of the commercial uses planned.

All of these accessibility features are consistent with and supportive of policies that various levels of governance (noted herein).

6.3.3 Improved Local Public Street Network Perspective

The planned public and private streets that form the framework of the Comprehensive Development Plan will facilitate the accessibility of the planned intensification within the Upper Kerr Village District. It will provide appropriate connectivity for pedestrians, cyclists, motorists and delivery and emergency services to circulate within the Subject Site as well as connect to the surrounding public rights of way and surrounding transportation systems. It will also provide a small measure of relief to certain minor movements within the existing public street network; however, it is not anticipated to negatively impact upon the subject development area.

6.4 REGIONAL AREA PERSPECTIVE

Notwithstanding the potential for the Draft OPA development potential to offer good alternatives to automobile travel through site design, existing and potential area transit improvements, and comprehensive TDM

programs and measures, the site is also well positioned to benefit from the adjacent and nearby regional road and highway network system.

This aspect of the Draft OPA development potential offers a balanced set of access opportunities. This will assist in ensuring that goods movements/deliveries and other servicing requirements, along with employees and residents who, given the choice elect to drive to and from the site, can still reasonably and safely access the site.

Eventual enhancements to the public transit system, contemplated as part of The Plan for Kerr Village and the previous transportation assessments (2009 Kerr Village Transportation Assessment and the 2009 Speers Road Environmental Study Report), and consistent with the Town's Livable Oakville Plan, will also contribute to the regional travel benefits that could be realized in the vicinity of the District.

From a regional area perspective, the Draft OPA development potential is consistent with the aforementioned planning documents since it maintains a balance between various modes of transportation accessibility – a balance that, as transit initiatives in the area are enhanced, can be shifted in favour of non-auto modes of travel.

UPPER KERR VILLAGE SITE MULTI-MODAL TRAVEL 7.0 **DEMAND FORECASTS**

In response to comments received from the Town of Oakville Transportation staff, the trip generation calculations applied to the Subject Site have been expanded to illustrate the pre- and the post-adjusted trip generation parameters, discussed in the following sections.

7.1 **BASELINE PARAMETERS**

BA Group has forecast travel demand for each of the proposed land use components (residential and retail) considering the following:

- Gross Person Trip Forecasting Adopted person trip rate back-calculated based on vehicular trip generation and mode split information from 2016 TTS data;
- Interaction and Pass-by Considerations Account for interaction effects for each land use pairing based upon interaction rates documented within the ITE Trip Generation Handbook 3rd Edition and pass-by rates from the ITE Trip Generation Manual 9th Edition for retail uses; and
- Application of Mode Share Assumptions Application of future mode split to the resultant net person trips for each land use to determine site travel demand by mode.

The following sections discuss the steps outlined above for each of the land uses proposed for the Site. References are made in regard to four types of trip making throughout the following sections. The terminology for these trip types is described below.

- Gross Person Trip refers to all person trips to/from the Site, inclusive of trips both internal and external to the Site.
- Internal Interaction Trip refers to trips made between the component land uses internal to the Site and would use the internal site facilities mostly as pedestrians; and
- External Primary Trip refers to new trips directly generated by the Subject Site where the other end of the trip is external to the site and not within the site vicinity; and
- External Pass-by Trip refers to existing trips along the travel corridor, where both ends of the trip are external to the Site, that are attracted to the site by some new land use (typically retail) provided by the Subject Site while these trip makers are on route for their existing trip

7.2 FORECAST APPROACH

Travel demand forecasts have been prepared, as part of this study, for the build-out of the proposed development based on the development statistics outlined in Section 1.2.

Trip generation for the proposed site has been conducted using the "back calculation" method by first deriving an appropriate vehicle trip rate to generate vehicle trips for each proposed land use. The resultant vehicles trips are then used to back calculate the associated person trips based on the existing (unadjusted) area auto mode share.

The internal person trip captures (interactions) have been determined according to the methodology described in Chapter 6 of the ITE Trip Generation Handbook, 3rd Edition. External site person trips for each land use are calculated by subtracting internal person trips from the total site person trips.

Travel demand of each mode for each use on the site has been established by applying the corresponding mode split parameters to the external site person trips.

Travel demand forecasts for the site reflect a higher level of non-auto use (i.e. transit and pedestrian trips) than existing today. This is reflective of the significant mix of uses in the site vicinity and various TDM measures proposed on-site, which are supportive of non-auto-based travel to and from the Site.

The following sections outline key technical assumptions used in establishing travel demand forecasts for the mix of uses on the site.

The adopted trip generation methodology was used to develop:

- 1. **Gross person trips** number of gross person trips generated by each land use;
- 2. Interaction person trips the degree to which different land uses interact with each other, thus decreasing the total number of external person trips;
- Net external trips number of external trips, after netting off interaction person trips from gross person trips;
- 4. **Mode split** adopted future mode splits by land use;
- 5. Multi-modal travel demand application of mode split to the net external trips to determine auto, transit, walking and cycling-based person trips; and
- 6. Vehicle travel demand application of auto occupancy to the total auto-based person trips.

7.3 **GROSS PERSON TRIPS FORECASTING**

7.3.1 **Base Residential Vehicle Trip Generation**

'Base' residential vehicle trip generation were established based upon a review of trip generation rates from ITE Trip Generation Manual (11th Edition) for General Urban/Suburban settings as well as proxy trip generation counts of residential developments in similar contexts within the GTA and Oakville. Weekday morning and afternoon base residential site vehicle traffic volumes are summarized in Table 3.

BASE RESIDENTIAL VEHICLE TRIP GENERATION TABLE 3

Draw Sita Laggian	Survey Data	l linite	All	/I Peak Ho	our	PN	I Peak Ho	our
Proxy Site Location	Survey Date	Units	ln	Out	2-Way	ln	Out	2-Way
1297 Marlborough Crt & 1360 White Oaks Blvd Oakville	Thu, Sept 26, 2019	266	0.09	0.17	0.26	0.19	0.13	0.32
75-95 Charolais Blvd Brampton	Thu, Aug 29, 2019	574	0.07	0.17	0.24	0.20	0.10	0.29
430 McMurchy Ave S Brampton	Thu, Aug 29, 2019	271	0.04	0.15	0.18	0.12	0.10	0.22
440 McMurchy Ave S Brampton	Thu, Aug 29, 2019	271	0.09	0.17	0.25	0.22	0.13	0.35
210-220 Steeles Ave W	Thu, Aug 29, 2019	500	0.02	0.17	0.19	0.16	0.07	0.24
Brampton	Tue, May 14, 2019	508	0.04	0.20	0.25	0.15	0.07	0.22
ITE222 – Multifamily Housing General Urban/Suburban – I		it	0.08	0.16	0.24	0.16	0.13	0.28
Average Vehicle Trip Rate (Including ITE)			0.06	0.17	0.23	0.17	0.10	0.27
Adopted Vehicle Trip Rate	Adopted Vehicle Trip Rate (Unadjusted)			0.17	0.23	0.17	0.10	0.27
Base Residential Site Vehi	cle Trips (1,842 units)		115	310	425	315	190	505

Notes:

The current development proposal features a total of approximately 1850 residential units across the entire Subject Site based upon the intensities developed in the Draft OPA. Under the ultimate condition (i.e., full building out of the Subject Site), the "base" residential vehicle trips, before applying the mode split reduction, generated by the proposed development is expected to be in the order of 425 and 505 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively,

7.3.2 **Base Retail Vehicle Trip Generation**

The retail traffic of the proposed development was generated based on application of the average rate of ITE820 (Shopping Centre) from the ITE Trip Generation Manual 11th Edition. The trip generation rates in the ITE Trip Generation Manual 11th Edition for Land Use 820 – Shopping Centre are derived based on a wide range of retail uses, including boutique and ancillary sized retail stores, medium-sized strip malls and large retail outlets. Although the occupant of the retail land use on the site is unknown at this stage, the retail uses

Proxy trip surveys conducted by BA Group at the aforementioned sites. 1.

Vehicle trips have been rounded to the nearest 5.

on-site are expected to consist of both a grocery store and small ancillary stores. Thus, BA Group is in the opinion that it is appropriate to use the LU820 - Shopping Centre to determine the retail trip generation for the proposed development.

In addition, and in response to comments provided by the Town of Oakville staff, the trip generation rates in the ITE Trip Generation Manual 11th Edition for Land Use 232 – High-Rise Residential with Ground-Floor Retail are derived based on a very limited number of sample points (2 samples for the AM Peak hour and 3 samples for the PM Peak hour). Thus, this analysis has projected the travel demand for the residential and retail land uses separately, based on the methodology outlined in the ITE Trip Generation Handbook (3rd Edition).

The current development proposal features a total of 7,915 m² of retail GFA. The proposed retail uses within the 588 Kerr Street and 171 Speers Road developments are expected to operate ancillary to the overall development (i.e., a relatively small amount of retail GFA spread amongst several buildings and primarily serving residents of the building and the immediate area). In this regard, vehicle trip generation associated with retail uses in these blocks is expected to be minimal. Vehicle trip generation associated with retail uses in 550 Kerr Street, 530 Kerr Street and 131 Speers Road developments (approximately 6,012 m² or 64,715 ft² GFA in total) is summarized in **Table 4**.

TABLE 4 BASE RETAIL VEHICLE TRIP GENERATION

	Α	M Peak Ho	ur	PM Peak Hour		
	In	Out	2-Way	ln	Out	2-Way
ITE820 – Shopping Centre ¹	0.52	0.32	0.84	1.63	1.77	3.40
Retail Site Vehicle Trips (64,715 ft² GFA)	30	20	50	95	105	200

Notes:

Under the ultimate condition (i.e., full building out of the Subject Site), the "base" retail vehicle trips, before applying the mode split reduction, generated by the proposed development is expected to be in the order of 50 and 200 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively.

7.3.3 **Base Multi-Modal Trip Generation**

A review of modal split values for the Town of Oakville from TTS 2016 data sets reveals that the Upper Kerr Village area of the Town is performing significantly better than the Town of Oakville as a whole. Multi-modal trip generation for the residential and retail uses on the site before applying mode split adjustment to reflect the Site's location and transportation characteristics are provided in **Table 5**.

Trip rates calculated in trips per 1,000 ft² GLA.

² The retail GLA is assumed to be 90% of the GFA.

SITE MULTI-MODAL TRIP GENERATION (UNADJUSTED) TABLE 5

			Resid	lential					Re	tail		
Mode	AN	l Peak H	our	PN	Peak H	our	AM	l Peak H	our	PM	Peak Ho	our
	In	Out	2Way	In	Out	2Way	In	Out	2Way	In	Out	2Way
Driver	57%	57%		67%	67%		83%	83%		71%	71%	
Passenger	13%	13%		13%	13%		9%	9%		21%	21%	
Transit	22%	22%		16%	16%		3%	3%		3%	3%	
Walk	7%	7%		4%	4%		1%	1%		5%	5%	
Cycle	1%	1%		0%	0%		4%	4%		0%	0%	
Total	100%	100%		100%	100%		100%	100%		100%	100%	
Driver	94	252	346	264	159	423	27	18	45	73	81	154
Passenger	21	58	79	51	31	82	3	2	5	22	24	46
Transit	36	97	133	63	38	101	1	1	2	3	3	6
Walk	12	31	43	16	10	26	0	0	0	5	5	10
Cycle	2	4	6	0	0	0	1	1	2	0	0	0
Total	165	442	607	394	238	632	32	22	54	103	113	216

Notes:

Weekday morning and afternoon peak hour gross person trips are summarized in Table 6.

TABLE 6 SITE GROSS PERSON TRIP GENERATION

Brown Survey Location		AM Peak Hou	r	PM Peak Hour			
Proxy Survey Location	In	Out	2-Way	In	Out	2-Way	
Total Residential Person Trips	165	442	607	394	238	632	
Total Retail Person Trips	32	22	54	103	113	216	
Total Site Gross Person Trips	197	464	661	497	351	848	

Under the ultimate condition (i.e., full building out of the Subject Site), the proposed Upper Kerr Village master plan development is expected to generate in the order of 661 and 848 person trips during the weekday morning and afternoon peak hours, respectively.

AM residential mode splits based on morning peak period residential outbound trips; PM residential mode-splits based on 1. afternoon peak period residential inbound trips

^{2.} Retail mode splits based on peak period two-way retail trips

Based on trips to/from TTS zones 4009 and 4011-4013. 3.

7.4 INTERACTION CONSIDERATIONS

The presence of multiple land uses (residential and retail) on-site supports the potential for internal trips between these uses. These trips are not considered to be external to the site but will be made primarily by walking between the uses within the proposed development. As a result, the total external trip generation may be less than the sum of the trips that are generated by each discrete land use. The methodology for internal trip capture is described in detail in Chapter 6 of the ITE Trip Generation Handbook, 3rd Edition.

These internal trips are removed from the trip generation potential of both the origin land use and the destination land use (or from both ends of the origin-destination, or "O-D", pairing). For example, one internal trip that originates from the residential component and ends in the retail component of the site is equivalent to one outbound internal trip for the residential component and one inbound internal trip for the retail component. If the residential component is forecasted to generate 10 total outbound trips in an hour, 1 of those outbound trips would be internal, while the remaining 9 outbound trips would be external. It can also be stated as total trip generation potential of each land use = internal trips + external trips.

Consequently, external site trips for each specific land use are equal to the total site trips for each land use subtracted by the internal site trips. The external site trips represent the trips that would ultimately be experienced on the area transportation network. In order to estimate the number of internal trips to and from each land use to another, the methodology outlined in Chapter 6 of the ITE Trip Generation Handbook was adopted. A summary of the external and internal site trips during the peak hours is provided in **Table 7**.

TABLE 7 EXTERNAL AND INTERNAL PERSON TRIP GENERATION SUMMARY

Land Use	Trin Type		AM Peak Hour		PM Peak Hour			
Land Use	Trip Type	In	Out	2Way	In	Out	2Way	
	Total	165	442	607	394	238	632	
Residential	Internal	3	4	7	29	10	39	
	External	162	438	600	365	228	593	
	Total	32	22	54	103	113	216	
Retail	Internal	4	3	7	10	29	39	
	External	28	19	47	93	84	177	
	Total	197	464	661	497	351	848	
Total	Internal	7	7	14	39	39	78	
	External	190	457	647	458	312	770	

7.5 SITE MULTI-MODAL TRAVEL DEMAND

The mode split summarized in **Table 5** reflects area travel characteristics under existing conditions. Under future conditions, the auto mode share is expected to further diminish as a result of: 1) improved transit services both in the site vicinity and further away in the city make transit a more appealing option of travel; 2) improved cycling and pedestrian facilities that increase comfort for pedestrians and cyclists and thus allow people to shift towards active transportation options; 3) intensification anticipated in the area enhances mixing of different uses, which improves interactions between them and reduces the need for longer-distance travel by driving; 4) TDM measures provided on the site and in the site vicinity that promotes travelling using nonauto mode.

The target mode share indicated in the Town of Oakville's Transportation Master Plan Switching Gears is 20% by 2031. It is noted that under existing conditions, the residential mode split in the Upper Kerr Village area has already reached this target during the weekday morning peak hour and is just below the target during the weekday afternoon peak hour.

This analysis assumes a 5% increase in transit mode share in the future for the residential land use. For the retail land use, the target transit mode share of 20% is assumed for the future condition. An additional 5% mode share increase in active transportation modes (walking and cycling) are also assumed, reflecting improved active transportation facilities that are planned in the area. The auto driver mode share has been reduced and offset by the modal shares of transit, walking and cycling. The resulting mode split adjustments are summarized in Table 8.

FUTURE TRAVEL MODE SPLIT ADJUSTMENT TABLE 8

Mada		Residential		Retail				
Mode	Existing	Future	Difference	Existing	Future	Difference		
Driver	57% (67%)	47% (57%)	-10% (-10%)	83% (71%)	61% (49%)	-22% (-22%)		
Passenger	13% (13%)	13% (13%)	0% (0%)	9% (21%)	9% (21%)	0% (0%)		
Transit	22% (16%)	27% (21%)	+5% (+5%)	3% (3%)	20% (20%)	+17% (+17%)		
Walk	7% (4%)	9% (6%)	+2% (+2%)	1% (5%)	3% (7%)	+2% (+2%)		
Cycle	1% (0%)	4% (3%)	+3% (+3%)	4% (0%)	7% (3%)	+3% (+3%)		
Total	100% (100%)	100% (100%)		100% (100%)	100% (100%)			

The resulting site multi-modal trip generation, after the mode split adjustments, are summarized in Table 9.

TABLE 9 SITE MULTI-MODAL TRIP GENERATION (ADJUSTED)

	Residential								Re	tail		
Mode	AM	l Peak H	our	PN	Peak H	our	AM	l Peak H	our	PM	Peak H	our
	In	Out	2Way	In	Out	2Way	ln	Out	2Way	ln	Out	2Way
Driver	47%	47%		57%	57%		61%	61%		49%	49%	
Passenger	13%	13%		13%	13%		9%	9%		21%	21%	
Transit	27%	27%		21%	21%		20%	20%		20%	20%	
Walk	9%	9%		6%	6%		3%	3%		7%	7%	
Cycle	4%	4%		3%	3%		7%	7%		3%	3%	
Total	100%	100%		100%	100%		100%	100%		100%	100%	
Driver	76	206	282	208	130	338	17	11	28	45	41	86
Passenger	21	57	78	47	29	76	2	2	4	20	17	37
Transit	44	118	162	77	48	125	6	4	10	19	17	36
Walk	15	39	54	22	14	36	1	1	2	6	6	12
Cycle	6	18	24	11	7	18	2	1	3	3	3	6
Total	162	438	600	365	228	593	28	19	47	93	84	177

The residential component of the proposed development is expected to generate in the order of 360 and 414 two-way auto trips during the weekday morning and afternoon peak hours, respectively.

The residential component of the proposed development is expected to generate in the order of 240 and 179 non-auto person trips during the weekday morning and afternoon peak hours, respectively.

The retail component of the proposed development is expected to generate in the order of 32 and 123 twoway auto trips during the weekday morning and afternoon peak hours, respectively.

The retail component of the proposed development is expected to generate in the order of 15 and 54 nonauto person trips during the weekday morning and afternoon peak hours, respectively.

7.6 SITE VEHICLE TRAVEL DEMAND

Site auto trip generation for the residential and retail land uses associated with the Subject Site are summarized in Table 10.

It is important to note that not all retail traffic volumes entering or exiting the site driveways are new traffic added to the street system. A pass-by trip is made as an intermediate stop on the way from an origin to a primary trip destination without a route diversion and therefore not a new trip to the overall roadway network. A primary trip is made for the specific purpose of visiting the generator and is a new trip that will be added to the overall road network.

For the purpose of this analysis, a 0% and 30% pass-by rate was assumed for the weekday morning and afternoon peak hour periods, respectively, based on provisions from the ITE Trip Generation Manual 3rd Edition.

TABLE 10 SITE VEHICLE TRIP GENERATION

		AM Peak Hou	r	ı	PM Peak Hour			
	ln	Out	2-Way	ln	Out	2-Way		
Residential Vehicle Trips	95	265	360	255	160	415		
Residential Vehicle Trip Rate ¹	0.05	0.14	0.20	0.14	0.09	0.23		
Retail Vehicle Trips	20	15	35	65	60	125		
Retail Vehicle Trip Rate ²	0.34	0.26	0.60	1.12	1.03	2.15		
Pass-by Trips (30%)	5	5	10	20	20	40		
Primary Trips (70%)	15	10	25	45	40	85		
Total New Site Traffic	115	280	395	320	220	540		

Notes:

- Residential trip rates calculated in trips per unit.
- 2. Retail trip rates calculated in trips per 1,000 ft² GLA.

The proposed development is anticipated to generate in the order of 395 and 540 two-way vehicle trips during the weekday morning and afternoon peak hours, respectively.

Site auto trip generation for each phase are established by applying the residential and retail trip rates from Table 10 to the proposed number of units and retail GLA under each phase, as summarized in Table 11.

TABLE 11 SITE VEHICLE TRIP GENERATION BY PHASE

	F	AM Peak Hou	PM Peak Hour			
	In	Out	2-Way	ln	Out	2-Way
Phase 1 Vehicle Trips						
Residential Vehicle Trips (687 units)	35	95	130	95	60	155
Retail Vehicle Trips (2,339 m² GFA)	5	5	10	15	15	30
Pass-by Trips (30%)	0	0	0	5	5	10
Primary Trips (70%)	5	5	10	10	10	20
Total New Site Traffic (Phase 1)	40	100	140	110	75	185
Phase 2 Vehicle Trips	•	•			•	
Residential Vehicle Trips (1,157 units)	60	165	225	160	100	260
Retail Vehicle Trips (3,319 m² GFA)	5	5	10	15	15	30
Pass-by Trips (30%)	0	0	0	5	5	10
Primary Trips (70%)	5	5	10	10	10	20
Total New Site Traffic (Phase 2)	65	170	235	175	115	290
Ultimate Condition Vehicle Trips						
Residential Vehicle Trips (1,842 units)	95	265	360	255	160	415
Retail Vehicle Trips (7,915 m² GFA)	20	15	35	65	60	125
Pass-by Trips (30%)	5	5	10	20	20	40
Primary Trips (70%)	15	10	25	45	40	85
Total New Site Traffic (Ultimate)	115	280	395	320	220	540

8.0 SUMMARY OF TRANSPORTATION ANALYSES **PARAMETERS**

8.1 STUDY AREA

The study area adopted for the transportation assessment is depicted in Figure 2 along with the existing public street lane configurations at corresponding key intersections assessed.

This study area was premised upon the 2009 Kerr Village Transportation Assessment recognizing that changes being proposed as part of the Draft OPA and associated lands only affected the lands north of Speers Road while also recognizing that the principal directions of vehicular travel for lands north of Speers will be east/west along Speers with a relatively strong orientation towards and from the Highway 403/QEW corridor.

Traffic operations analyses were undertaken at the following intersections in the site vicinity:

Signalized Intersections:

- Speers Road / Kerr Street
- Speers Road / Cross Avenue
- Speers Road / Dorval Road
- Kerr Street / Stewart Street
- Dorval Road / Wyecroft Road
- Kerr Street / Shepherd Road (future condition)
- Speers Road / St. Augustine Drive (future condition)

Unsignalized Intersections:

- Speers Road / St. Augustine Drive (existing condition)
- Kerr Street / Shepherd Road (existing condition)
- Kerr Street / Wyecroft Road
- Kerr Street / Prince Charles Drive
- Kerr Street / Elmwood Road
- Speers Road / Interim Private Street Connection (future condition)

8.2 **HORIZON YEARS**

Transportation analyses have been completed for existing conditions (year 2021) and horizon years 2031 (Interim conditions) and 2036 (Ultimate conditions).

8.3 **ANALYSIS PERIODS**

Traffic operations analyses were undertaken for the weekday morning and afternoon peak hours.

8.4 **EXISTING TRAFFIC VOLUME CONDITIONS**

BA Group prepared a composite existing traffic volume base that included the following considerations:

- November 2021 base traffic volumes for all study area intersection being assessed;
- Adjustments to November 2021 base volumes to reflect traffic volume magnitudes that ensured non-Covid-19 conditions were taken into consideration and appropriate volumes are used for base conditions:
- April 2019 traffic counts along the study area network were compared to the November 2021 counts and where the April 2019 volumes were higher, they were adopted for analyse purposes.
- The assumption has been that since the start of Covid-19 in March of 2020 growth in traffic volumes has obviously not occurred and the resulting 2019 adjustments to 2021 volumes serves as a base 2021 condition.

Figure 4 illustrates the existing traffic volumes adopted for analysis purposes.

8.5 FUTURE BACKGROUND TRAFFIC VOLUME CONDITIONS

BA Group forecast future traffic volume unrelated to the intensification of the Subject Site by way of two methods:

- Area development projects that would be generating traffic in the study area that would materially add traffic to the subject streets being assessed.
 - o This "development related" traffic included the following developments listed in Table 12.
- Corridor growth along major corridors in the study area on the through movements at a compounded rate of 1.3% per annum up to 2031 and one half of that rate to 2036.

TABLE 12 BACKGROUND DEVELOPMENTS CONSIDERED

Development	Development Statistics	Source	Date
North Service Road With QEW Ramp Hotel	114 hotel rooms	LMM Engineering Inc.	Aug 2018
224-234 Kerr St 10, 118, 120 & 124 Deane Ave	126 residential units	No TIS	
58 & 62 Shepherd Rd	192 residential units 9 live-work units	No TIS	
271 Cornwall Rd 485 Trafalgar Rd	292 residential units 4,065 sm retail GFA	R.J. Burnside	Jul 2019
157 Cross Ave	252 residential units 289 sm retail GFA 579 sm office GFA	Trans-Plan	Jan 2019
50 Speers Rd	334 residential units	BA Group	To be submitted

Figure 5 illustrates the Background Development traffic assignment. Figure 6 illustrates the Future Background traffic volumes including the background development related allowances and corridor growth percentage allowances. Figure 6 forms the basis for adding Draft OPA traffic volumes forecasts which are explained below.

SITE TRAFFIC VOLUMES 8.6

8.6.1 **Existing Site Traffic**

No existing traffic data is available for the existing retail plaza that the Site is currently located on. Therefore, BA Group consulted the ITE Trip Generation Manual 11th Edition to estimate the number of trips currently generated by the retail plaza. Assignment of existing retail plaza trips to the road network is based on the existing local area traffic patterns. A 30% pass-by rate was assumed based on provisions from the ITE Trip Generation Manual 3rd Edition. Site traffic of the existing cinema was established based on turning movement count information collected by BA Group at existing cinema driveways. Trip generations of the existing plaza and cinema are summarized in Table 13.

TABLE 13 EXISTING SITE TRAFFIC GENERATION

	А	M Peak Ho	ur	Р	M Peak Ho	ur
	ln	Out	2-Way	ln	Out	2-Way
Existing	g Retail Pla	za Site Tra	ffic	•		•
ITE820 – Shopping Centre (General Urban/Suburban) 1	0.52	0.32	0.84	1.63	1.77	3.40
Existing Retail Plaza Trips (126,000 ft ² GFA)	60	35	95	185	200	385
Pass-by Trips (30%)	15	15	30	60	60	120
Primary Trips (70%)	45	20	65	125	140	265
Existi	ing Cinema	Site Traffi	С			
Existing Cinema Site Traffic	20	0	20	20	15	35
Tota	I Existing	Site Traffic				
Total Existing Site Traffic	80	35	115	205	215	420

Notes:

Rate specified in trips per 1,000 ft² GLA. 1.

2. The retail GLA is assumed to be 90% of the GFA.

The existing retail plaza generates in the order of 95 and 385 two-way trips during the weekday morning and afternoon peak hours, respectively.

With the build-out of 588 Kerr Street, 550 Kerr Street, 530 Kerr Street and 131 Speers Road, the existing retail plaza will be demolished. For this analysis, the existing primary site traffic was removed from the area road network. The existing pass-by trips were removed from the relevant existing site driveways and reassigned back onto adjacent corridors.

The existing cinema is expected to generate in the order of 20 and 35 two-way trips during the weekday morning and afternoon peak hours, respectively.

With the build-out of 171 Speers Road, the existing cinema will be demolished. Trips generated by the existing cinema were removed from the area road network for the analysis of Phase 2 and Ultimate Build-Out conditions when 171 Speers Road is developed.

8.6.2 **Trip Generation**

An outline of the net new vehicular trips expected as a result of each phase of the proposed development is provided in Table 14.

TABLE 14 SITE TRAFFIC GENERATION SUMMARY

	ļ ,	AM Peak Hou	ır	F	PM Peak Hou	r			
	ln	Out	2-Way	In	Out	2-Way			
Phase 1 Trip Generation		•	•	•	•	•			
Total Site Trips	40	100	140	110	75	185			
Existing Site Trips Removal	-60	-35	-95	-185	-200	-385			
Net New Site Trips	-20	65	45	-75	-125	-200			
Phase 2 Trip Generation	Phase 2 Trip Generation								
Total Site Trips	65	170	235	175	115	290			
Existing Site Trips Removal	-80	-35	-115	-205	-215	-420			
Net New Site Trips	-15	135	120	-30	-100	-130			
Ultimate Condition Trip Generation		•	•	•	•	•			
Total Site Trips	115	280	395	320	220	540			
Existing Site Trips Removal	-80	-35	-115	-205	-215	-420			
Net New Site Trips	35	245	280	115	5	120			

The proposed development is anticipated to generate in the order of 395 and 540 two-way trips during the weekday morning and afternoon peak hours, respectively. The existing site uses generate in the order of 115 and 420 two-way trips during the weekday morning and afternoon peak hours, respectively. Thus, the Project will result in a net reduction of 280 and 120 two-way trips during the weekday morning and afternoon peak hours, respectively.

8.6.3 **Trip Distribution and Assignment**

Vehicular distribution was estimated based upon a review of the 2016 TTS origin and destination (OD) data sets for the Upper Kerr Village area. A further review of general traffic patterns and land use distribution within Kerr Village and surrounding areas was also included to estimate the likely travel patterns of residential land uses situated in this area of the Town of Oakville. Table 15 summarizes the vehicular distribution adopted for analyses purposes.

TABLE 15 UPPER KERR VILLAGE SITE TRAFFIC DISTRIBUTION

Pinations	Resid	lential	Retail		
Directions	Outbound ¹	Inbound ²	Outbound ³	Inbound ⁴	
To/From East on Highway 403	38%	31%	13%	21%	
To/From West on Highway 403	21%	10%	10%	4%	
To/From North on Kerr St	7%	9%	13%	7%	
To/From South on Kerr St	8%	10%	13%	6%	
To/From South on Dorval Dr	6%	2%	19%	1%	
To/From East on Speers Rd	8%	16%	15%	26%	
To/From West on Speers Rd	4%	12%	5%	15%	
To/From West on Wyecroft Rd	4%	5%	1%	14%	
To/From South on Queen Mary Dr	4%	5%	11%	6%	
Total	100%	100%	100%	100%	

Notes:

- Based upon morning peak period residential outbound trips
- 2. Based upon afternoon peak period residential inbound trips
- 3. Based upon afternoon peak period retail outbound trips
- 4. Based upon afternoon peak period retail inbound trips
- Based on trips to/from TTS zones 4009 and 4011-4013.

8.6.4 **Subject Site Traffic Assignments**

8.6.4.1 **Development Phasing Characteristics**

Vehicular traffic assignments have been prepared to represent two future conditions:

- An Interim Condition (2031) where 171 Speers Road lands are assumed to NOT redevelop; and,
- An Ultimate Condition (2036) where all of the Subject Site are assumed to redevelop.

These two conditions examine the resulting operating conditions in response to potential redevelopment decisions associated with 171 Speers Road. We note that the Subject Site can be configured in response to this condition given the "private street" proposed within the Subject Site. The private street provides flexibility through an interim public park configuration. The private street on the east side of the public park could be initially connected to Speers Road offering a phased introduction of a street network that can respond to the collective needs of development (from both accessibility and circulation perspectives), prior to the 171 Speers Road property being redeveloped. Implementing segments of the Private Street – given an overall street network plan to work towards - would be more efficiently and cost effectively undertaken given the flexibility of the private Local Street.

These conditions are carried through the analyses.

The following figures illustrate the various scenarios analyzed herein:

Figure 7 – illustrates the Existing Subject Site Traffic volume Removal (Interim Condition)

- Figure 8 illustrates the Existing Subject Site Traffic volume Removal (Ultimate Condition)
- **Figure 9** illustrates the New Subject Site Traffic Volume (Interim Condition)
- **Figure 10** illustrates the New Subject Site Traffic Volume (Ultimate Condition)
- Figure 11 Net New Subject Site Traffic Volume (Interim Condition)
- Figure 12 Net New Subject Site Traffic Volume (Ultimate Condition)
- Figure 13 Future Total Traffic Volumes (Interim)
- **Figure 14** Future Total Traffic Volumes (Ultimate)

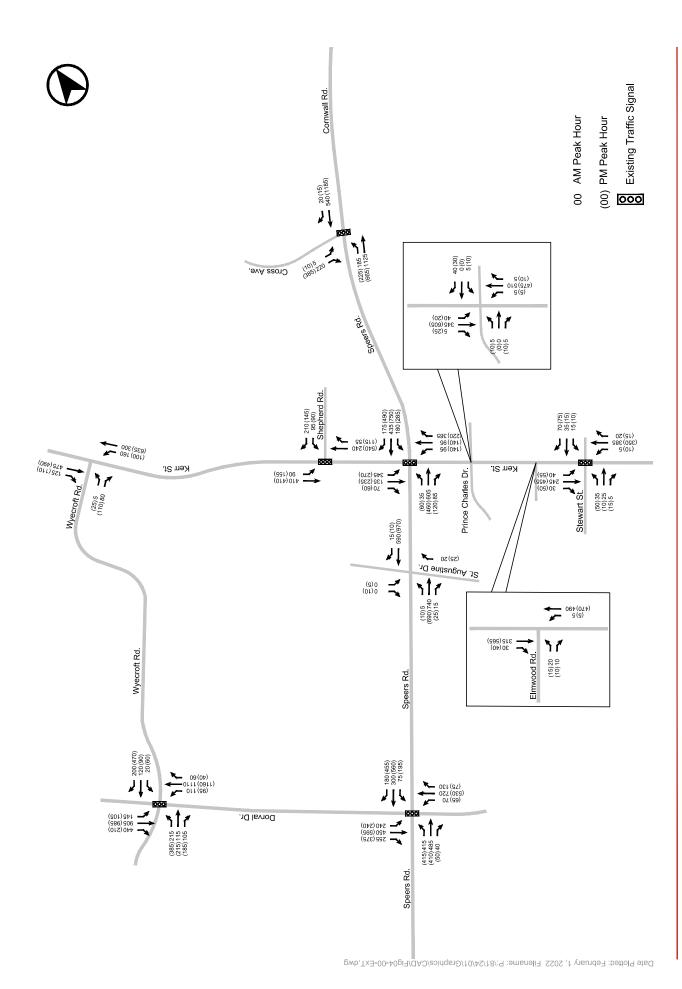


FIGURE 4 EXISTING TRAFFIC VOLUMES

Existing Traffic Signal Cornwall Rd. 00 AM Peak Hour (00) PM Peak Hour (40)20 (15)10 Cross Ave. 50 (30) (50) 25 (5) 10 (5) 10 (5) 15 (15) (15) 2(0) (2) 10 (2) 10 (5)2 (10)0 (10)0 Kerr St. Kerr St. 20(10) 2(2) 2(20) Prince Charles Dr. 5 (20) Stewart St. 70(45) St. Augustine Dr. (70)25 (25) 25 20 (30) Wyecroft Rd. Elmwood Rd. Speers Rd. 45 (20) 25 (25) 03(06) 3(01) Dorval Dr. 12(30) (40) 10 Speers Rd. Date Plotted: February 2, 2022 Filename: P:/81\24\01\Graphics\CAD\Fig05-00-BD.dwg

FIGURE 5 BACKGROUND DEVELOPMENT TRAFFIC VOLUMES

UPPER KERR VILLAGE

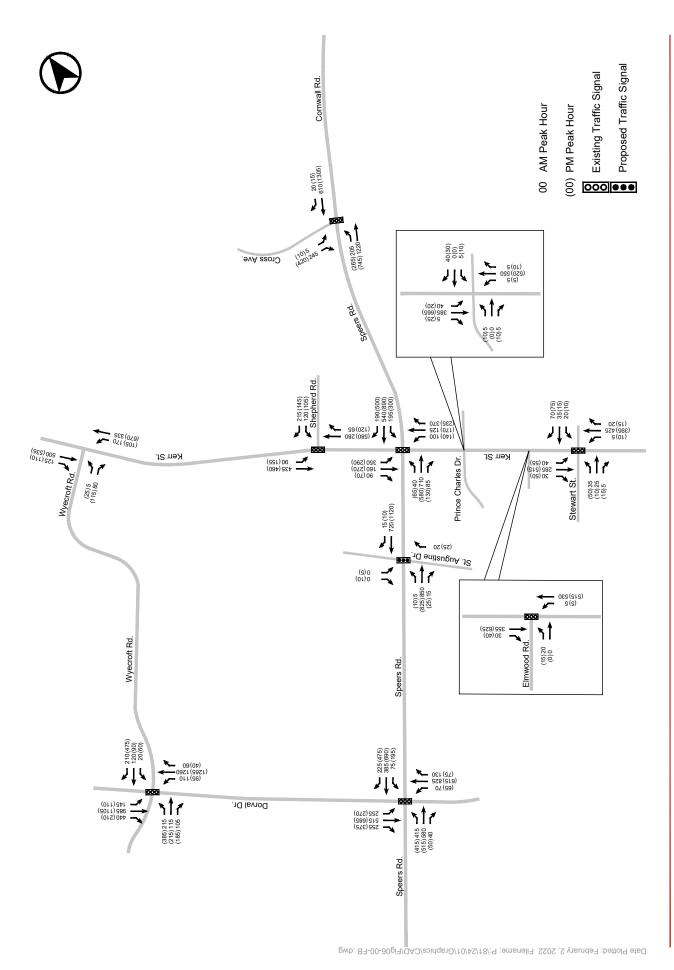


FIGURE 6 FUTURE BACKGROUND TRAFFIC VOLUMES

Existing Traffic Signal Cornwall Rd. 00 AM Peak Hour (00) PM Peak Hour -10(-30) Cross Ave. -2(-50) Shepherd Rd. 5 (-10) 5 (-20) 0(01-) 0(31-) 0(01-) (9-)0 Kerr St. Kerr St. (02-) 8-(02-) 8-(6-) 0 Prince Charles Dr. (9-)0 (-15)-5 Wyecroft Rd. Stewart St. St. Augustine Dr. -10(-75) (-75)-25 g-(g-) (-75)-25 -5 (-20) Wyecroft Rd. Elmwood Rd. Speers Rd. -5 (-40) 0 (-5) -5 (-30) Dorval Dr. (96-)81--50 (-55) (-50)-5 Speers Rd.

FIGURE 7 EXISTING SITE TRAFFIC VOLUMES REMOVAL (INTERIM)

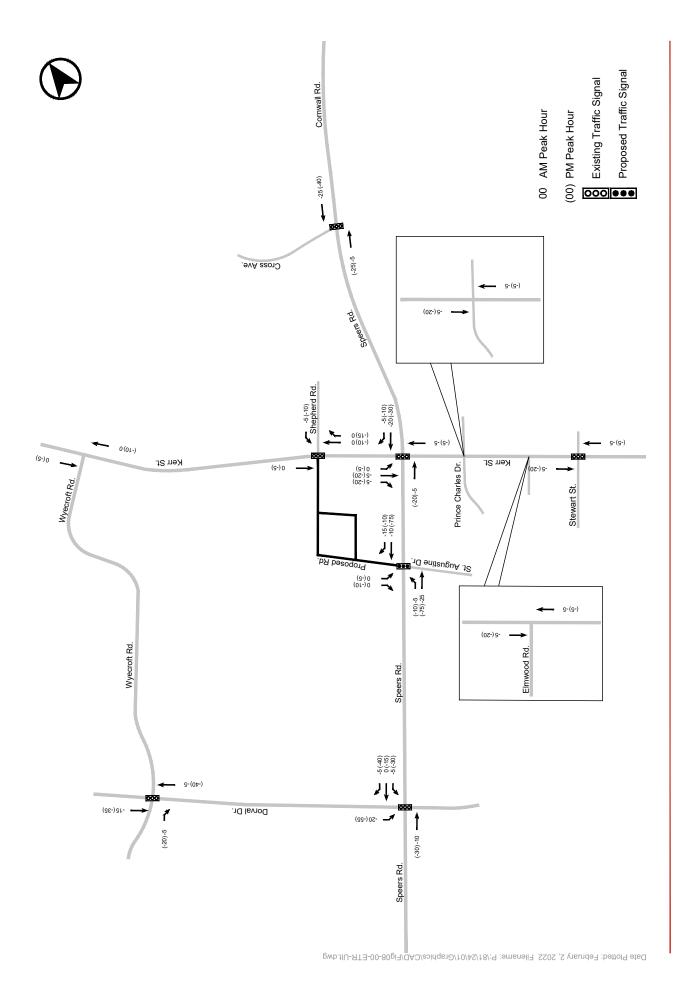


FIGURE 8 EXISTING SITE TRAFFIC VOLUMES REMOVAL (ULTIMATE)

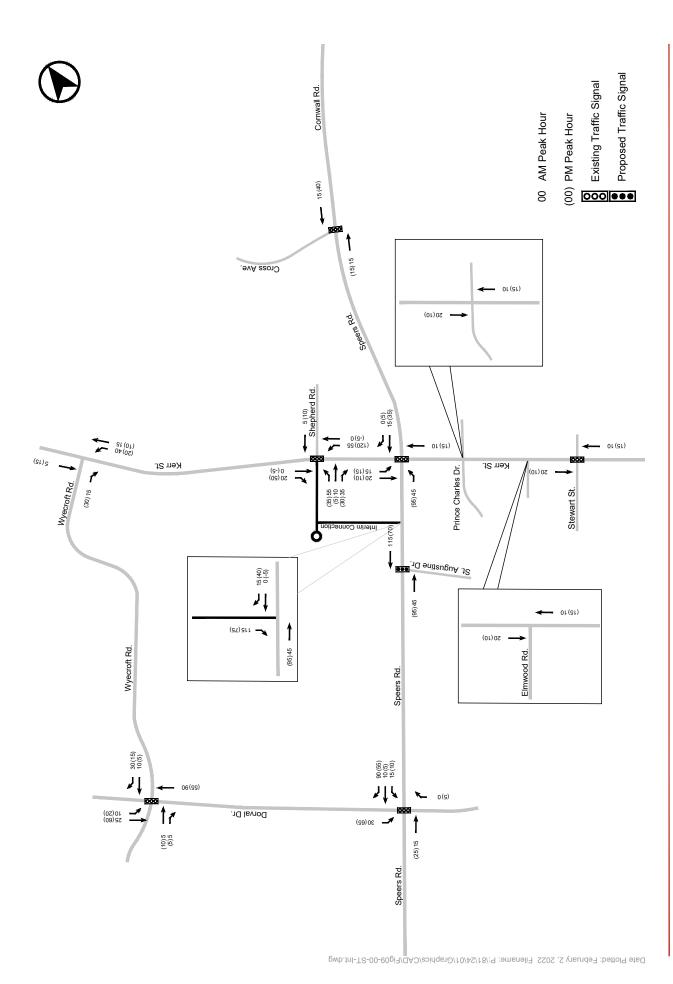


FIGURE 9 NEW SITE TRAFFIC VOLUMES (INTERIM)

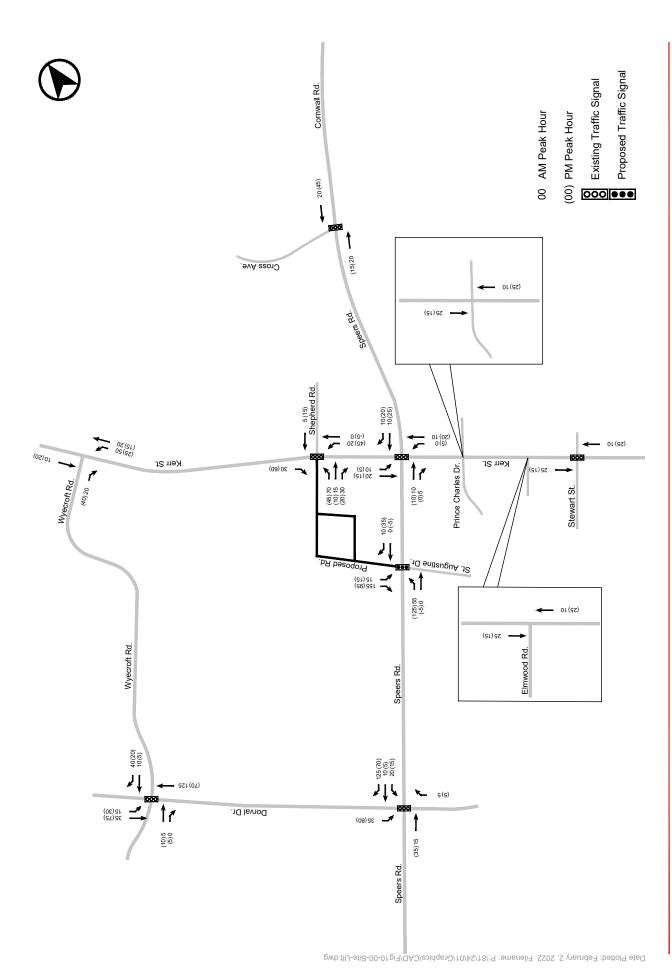


FIGURE 10 NEW SITE TRAFFIC VOLUMES (ULTIMATE)

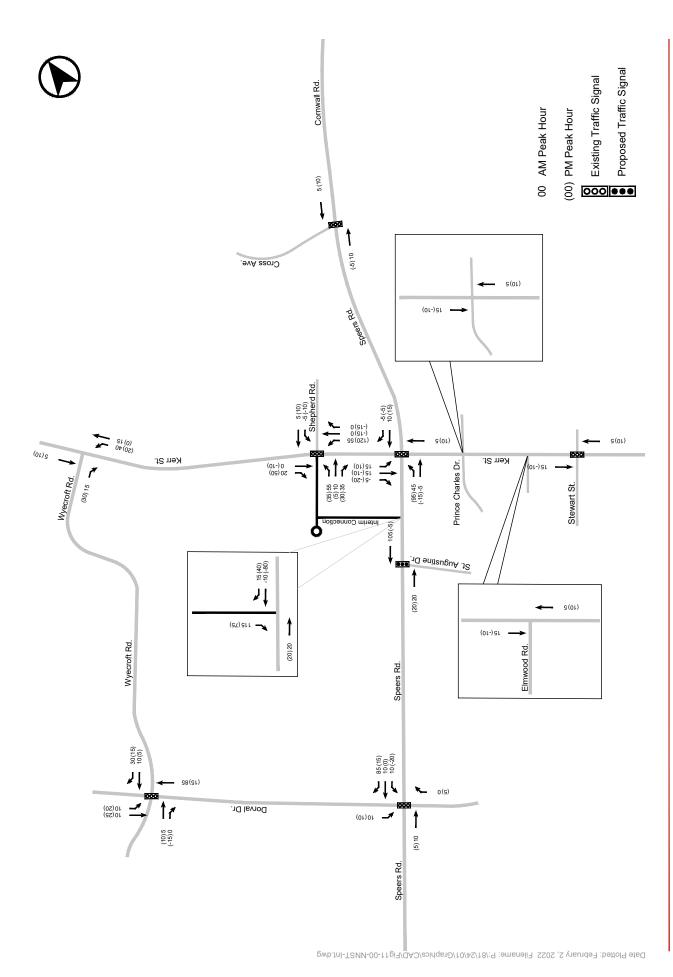


FIGURE 11 NET NEW SITE TRAFFIC VOLUMES (INTERIM)

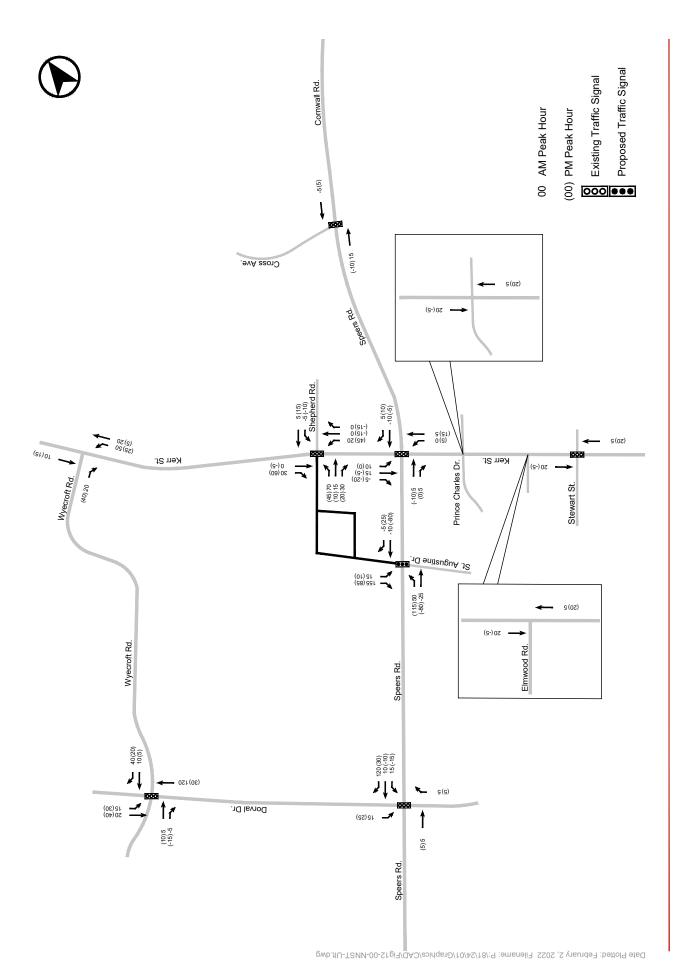


FIGURE 12 NET NEW SITE TRAFFIC VOLUMES (ULTIMATE)

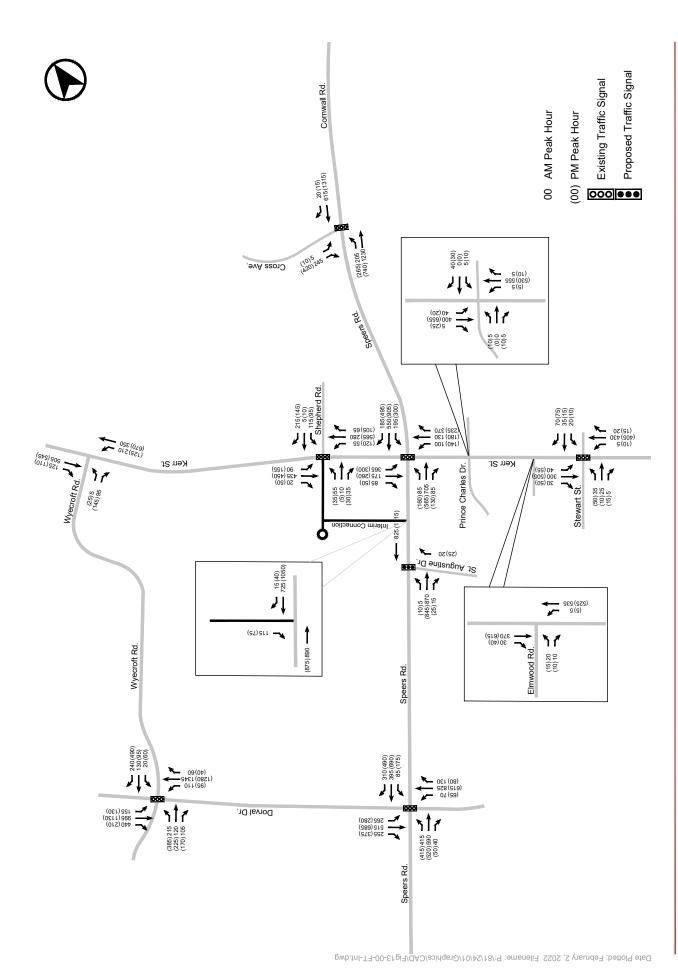


FIGURE 13 FUTURE TOTAL TRAFFIC VOLUMES (INTERIM)

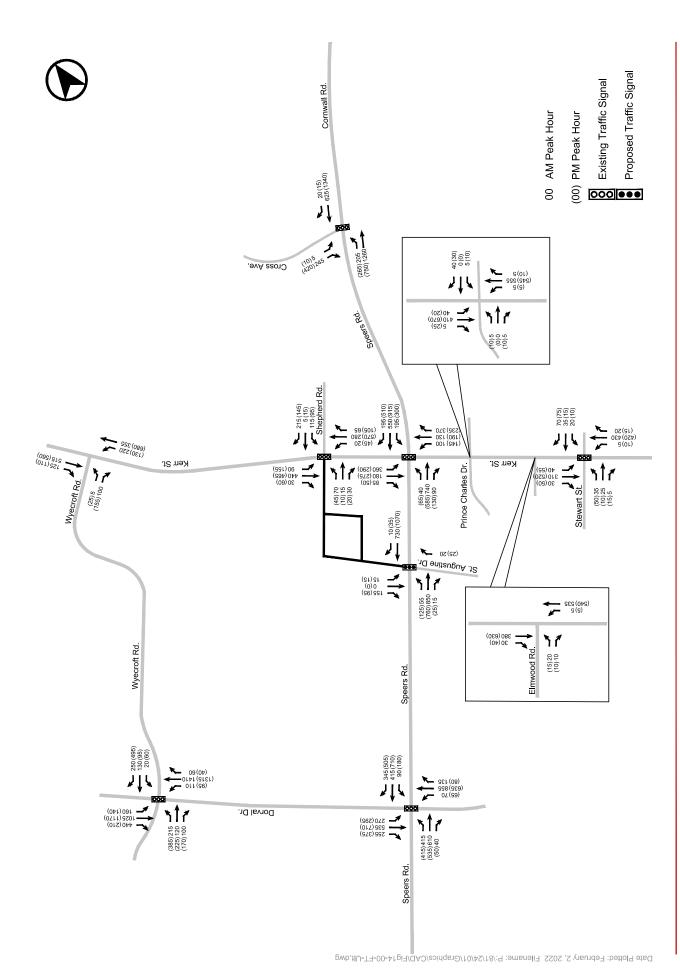


FIGURE 14 FUTURE TOTAL TRAFFIC VOLUMES (ULTIMATE)

PUBLIC STREET NETWORK ANALYSIS SUMMARY 9.0

9.1 **ANALYSES PARAMETERS**

The Synchro analyses conducted herein adopt standard Synchro analyses default parameters.

SIGNALIZED INTERSECTION ANALYSES 9.2

All study area signalized intersections operate within their capacities under all scenarios analyzed.

This includes both the Interim Scenario (i.e., no redevelopment on the 171 Speers Road lands) which does not extend St. Augustine north of Speers Road. The Interim condition assumes a private street connection from within the Subject Site to Speers Road that would operate under right-in/right-out unsignalized conditions. The extension of Shepherd Road west of Kerr Street forms part of this scenario. Shepherd and Kerr would be designed as a signalized intersection per the Rail Grade Separation alignment design plans.

The Ultimate scenario analyzed adopts the extension of St. Augustine Drive north of Speers Road to form a continuous public street between Kerr Street (opposite Shepherd Road) and Speers Road, where both "ends" of this new public street would be signalized.

The recommended lane configurations and public street improvements identified in the 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report, the Kerr Street Grade Separation Proposed Road Improvements and the proposed Draft OPA provisions (within the Subject Site are sufficient to accommodate the development intensification associated with the Draft OPA provisions.

One "sensitivity" test that was conducted included the introduction of a northbound right turn lane on Dorval at Speers that was identified in the 2009 Kerr Village Transportation Assessment. This added improvement – which is not identified in the 2009 Speers Road Environmental Study Report, offers a relatively significant benefit to the over all operating conditions associated with this intersection; i.e., about a 10 percent improvement in overall operating benefits. This improvement would appear to be able to be implemented within the existing Dorval right-of-way – according to a preliminary sketch provided in the 2009 Kerr Village Transportation Assessment. Based upon a more detailed functional design exercise, it could be confirmed whether this improvement would require any 3rd party lands.

At this juncture, it is recommended that the northbound right turn on Dorval at Speers Road be carried further for functional design review and costing to improve the overall Speers and Dorval corridors operating characteristics and mitigate any future impacts at the Dorval and Speers signalized intersection.

All other improvements identified in the 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report and the Kerr Street Grade Separation Proposed Road Improvements should be implemented per prior recommendations.

A summary of signalized intersection capacity analyses indices and corresponding queues are presented in Appendix I.

9.3 **UNSIGNALIZED INTERSECTION ANALYSES**

In general, the intersections that would remain unsignalized into the future (Shepherd /Kerr and Speers/St. Augustine would be converted to signalized intersections in the future) will operate under reasonable good conditions.

The Kerr Street / Wyecroft Road unsignalized intersection will start to show signs of longer delays as development traffic balances the option of using Wyecroft Road as an alternate to Speers Road, between Kerr Street and Dorval Road. This intersection should be monitored to determine whether signalization should be implemented. Signals introduced at that Kerr/Wyecroft intersection would operate under reasonably good conditions. The geometric design conditions associated with signalization should be carefully considered given the nature of design vehicles (tractor trailers) using this intersection on a regular basis.

No further modifications are recommended for the unsignalized intersections within the Study Area.

A summary of unsignalized intersection capacity analyses indices is also presented in Appendix I.

PUBLIC STREET NETWORK ANALYSES SUMMARY -10.0 KERR STREET UNDERPASS DEFFERAL CONDITION

10.1 **OVERVIEW**

A recent announcement from Metrolinx indicated that the proposed Kerr Street Underpass project that had been approved after having conducted an Environmental Assessment Study, has been indefinitely deferred. The reasons cited for the deferral relate to the forecast cost escalations of the project.

As part of the design exercise resulting from the Environmental Assessment process, a 30% set of design plans had been prepared that identified the improvements to Kerr Street from Speers Road to Wyecroft Road that would accompany the grade separation between the adjacent Metrolinx rail corridor and Kerr Street.

As a result of the Underpass design that had been prepared, Metrolinx expropriated the necessary lands required to accommodate the Underpass project from the Subject Site land owners, including both fee simple and temporary eastment interests. The temporary easement interests were taken by Metrolinx to facilitate the actual construction process associated with the Underpass Project and the improvements to Kerr Street.

As a result of the indefinite deferral of the Underpass project, the Town of Oakville has requested that additional analyses be reported upon to address certain potential impacts on the OPA lands in question. The correspondence from the Town staff is contained in **Appendix A**. The request for additional analyses identified the following 4 scenarios to be reviewed:

- 1. Grade separation in place by 2031
- Grade separation and associated road widening, intersection improvements, turning lanes, and active transportation infrastructure deferred beyond 2031 and 2036
- 3. Grade separation deferred beyond 2031 and 2036 but other transportation improvements and signal timing changes are in place. Required infrastructure improvements to support the proposed development to be identified through the TIS.
- 4. Level crossing is closed and there is no through access along Kerr Street across the existing level crossing.

10.2 **OVERVIEW OF ANALYSIS SCENARIOS REVIEWED**

10.2.1 Scenario #1 – Kerr Street Underpass In Place by 2031:

An overview of the first scenarios represents the analyses conducted and reported upon in Section 8.0 of this report.

Scenarios #2 and #3 – Kerr Street Underpass Deferral Condition: 10.2.2

The 2nd and 3rd scenarios differ only in their assumptions associated with the improvements that may or may not be implemented in light of the Underpass project deferral. In other words, would there be any impacts to what may be able to be developed on the OPA lands, which are already impacted by virtue of the expropriations, if there were corresponding delays to the improvements along Kerr Street or along Speers Road and the Underpass deferral.

On this issue, the improvements along Speers Road could still be implemented with the deferral of the Underpass project. There would have to be modifications made to where the Speers Road improvements "tied back into Kerr Street", but the resulting intersection could function with the "existing" Kerr Street alignment at an improved Speers Road. Therefore, based upon the outcome of the supporting EA for the Speers Road corridor, the Speers Road improvements, as identified in the supporting EA report, have been assumed to be required and would be implemented with or without the intensification proposed in the Draft OPA.

As a result, the analyses undertaken to address the Scenario 2 and 3 above, were collapsed into one scenario which tested a "without" and "with" Kerr Street set of improvements (i.e., Dual SB Left turn lanes) along with assumed development levels on the OPA lands.

The analyses of the Underpass Deferral scenario considered two levels of development intensity on the OPA Lands. These development scenarios were premised upon the following key assumptions:

- the impacts to the developable area within the OPA lands having taking into account the expropriation lands that are now owned by/impacted by Metrolinx and, therefore, not available to developed upon; and,
- lands that have been identified by Metrolinx, beyond the expropriated lands, which are required for the implementation of the Underpass project and Kerr Street improvements and, therefore, also not available to be developed upon.

These two conditions were reviewed by USI and development phasing conditions were established which were incremental development scenarios (i.e., consistent with) the Interim and Ultimate development scenarios considered in the review of the OPA lands. As noted in earlier sections of this report and in the USI planning reports, the Interim development scenario considered the development intensity acknowledging that the 171 Speers Road property may not develop along with the properties associated with 588 Kerr Street, 550 Kerr Street and 530 Kerr/131 Speers Road. The Ultimate development scenario considered the development of the entire OPA lands.

The two phasing scenarios associated with the Kerr Street Underpass deferral condition include the following characteristics:

- Phase 1 Kerr Street Underpass Deferral Condition:
 - o Development properties: 588 Kerr Street, 550 Kerr Street and 530 Kerr/131 Speers Road are considered for development;
 - The demonstration plan associated with the full OPA build out condition was reviewed and only those portions of the above noted properties that could be reasonably developed given the two key assumptions on developable land limitations were identified as within the Phase 1 context;
 - This included a total of 688 residential units and a total of 2,339 square metres of retail GFA. This is spread across the 3 properties noted above.
 - The extent of this Phase 1 development scenario is summarized in tabular form and schematically illustrated and in Figure 15 below.

- Phase 2 Kerr Street Underpass Deferral Condition:
 - o Development properties: 588 Kerr Street, 550 Kerr Street and 530 Kerr/131 Speers Road and 171 Speers Road are considered for development:
 - The demonstration plan associated with the full OPA build out condition was reviewed and only those portions of the above noted properties that could be reasonably developed given the two key assumptions on developable land limitations were identified as within the Phase 1 context;
 - This included a total of 1,158 residential units and a total of 3,319 square metres of retail GFA. This is spread across the 4 properties noted above.
 - The extent of this Phase 2 development scenario is summarized in tabular form and schematically illustrated and in Figure 15 below.

Trip generation characteristics associated with both Phase 1 and Phase 2 development conditions are summarized in Table 11.

The access assumptions adopted for the Kerr Street Underpass Deferral scenarios included the following:

- Phase 1 Kerr Street Underpass Deferral Condition
 - o One all-movements unsignalized access from Speers Road
 - Approx. 130 m from the centreline of the existing Kerr Street (+/-112 m from the eastbound Stop Bar on Speers Road at Ker Street) and approx. 100 metres west of St. Augustine Drive;
 - This is approximately 45 metres further west than the easterly existing all-movements driveway access to the existing shopping centre on the OPA lands today;
 - This would make use of the Private Street described in the Interim Condition originally reviewed in BA Group's February 2022 TIS;
 - This Private Street would serve all buildings developed as part of a Phase 1 scenario and would be capable of accommodating all design vehicles and Emergency Services vehicles;
 - A temporary connection between the N-S Private street and Kerr Street could be implemented and staged to respond to the Kerr Street Underpass construction conditions.
 - All buildings that would be developed as part of the Phase 1 scenario would be configured with their requisite Site Plan access driveways, loading areas, underground parking access and active transportation elements such that they would not need to be further altered during subsequent phases of development (this ensures that the operations of the Site buildings would be continuous through subsequent development phases)
- Phase 2 Kerr Street Underpass Deferral Condition
 - Under Phase 2 conditions and the introduction of the 171 Speers Road property, a second point of access would be introduced as the St. Augustine Drive extension into the OPA lands.
 - o At this point in time, the Private Street connection introduced in Phase 1 would revert to a Right-in/Right-out connection on Speers Road.

- The resulting street network supporting the Phase 2 development levels would be a continuous inverted-U shaped combination of a Public Street and a Private Street;
- All development characteristics noted in Phase 1 above would be consistent within Phase 2
 (i.e., all buildings would be self-sufficient in terms of access and circulation amongst vehicular
 and active transportation connections).
- Upon development of the Kerr Street Underpass, the Private Street connection to Speers Road could
 be terminated as proposed under Ultimate conditions given the introduction of the Shepherd Street
 extension into the Site and the completion of the development proposed as part of the OPA lands.

Although not analyzed herein, two additional Phases have been identified by USI; referred to as Phases 3 and 4 in the Urban Design Brief. These additional Phases demonstrate the delivery of buildings along Kerr Street when the Kerr Street frontage is able to be developed; i.e., at which time the Kerr Street Underpass and related improvements along Kerr Street are completed to the point where development on the west side of Kerr Street could proceed. In part, this is to demonstrate, on a high-level, that the grocery store contemplated for the northwest corner of Kerr Street and Speers Road would have to be delivered during later stages of development.

FIGURE 15: PHASE 1 AND PHASE 2 DEVELOPMENT SCENARIOS - KERR STREET UNDERPASS DEFERRAL CONDITION

Phase 1 Development Scenario - Kerr Street Underpass Deferral Scenario

	Retail GFA (sq m)	Residential GFA (sq m)	Above Grade Parking	Total GFA (sq m)	# of Units	Net Floor Area (sq m)	Site Area	FSI
588 Kerr (AREA A)	400	17,394	0	17,794	187	15,125	9,058	1.67
550 Kerr (AREA B)	397	16,667	0	17,064	183	14,505	8,017	1.81
530 Kerr + 131 Speers (ΔΡ.ΕΔ.Ω)	1,542	29,491	0	31,033	317	26,378	12,398	2.13
171 Speers (AREA D)	0	0	0	0	0	0	18,845	0.00
TOTAL	2,339	63,552	0	65,891	688	56,007	48,318	1.16





Phase 2 Development Scenario - Kerr Street Underpass Deferral Scenario

	Retail GFA (sq m)	Residential GFA (sq m)	Above Grade Parking	Total GFA (sq m)	# of Units	Net Floor Area (sq m)	Site Area	FSI
588 Kerr (AREA A)	400	17,394	0	17,794	187	15,125	9,058	1.67
550 Kerr (AREA B)	397	16,667	0	17,064	183	14,505	8,017	1.81
530 Kerr + 131 Speers (∆RF∆ ∩)	1,542	29,491	0	31,033	317	26,378	12,398	2.13
171 Speers (AREA D)	980	43,710	4,278	48,968	470	41,623	18,845	2.21
TOTAL	3,319	107,262	4,278	114,858	1,158	97,630	48,318	2.02





In addition to the improvements assumptions and the development intensity assumptions noted above, BA Group also conducted direct field measurements of existing train crossings along the Metrolinx rail corridor at Kerr Street in April of 2022, during peak periods of the morning and afternoon weekday conditions. This was done to determine the impact a train crossing has upon the traffic flow characteristics along Kerr Street and so that increases in rail activity could be appropriately modelled for future conditions. The frequency of train crossings and the duration of the "gates down" impacts were noted. This data was converted into a capacity equivalent (a 'volume to capacity' measure of the at-grade rail crossing) to assess the relative impacts of increasing rail frequency on the operating conditions along Kerr Street under future conditions.

In order to assess the capacity implications of added rail activity, the existing train frequency recorded in the field (approximately 6 to 7 two-way GO Rail commuter trains were observed along with 1 VIA train during the morning and afternoon peak hours - resulting in a headway of approximately 7.5 minutes to 8.5 minutes) was increased based upon the GO Rail forecast that commuter trains along the Lake Shore West corridor will increase their frequency to 15 minute, or better, service, two-way, all day. The resulting headways tested range from 3 to 5 minute headways for the future train service. That is between 12 and 20 two-way train movements crossing the at-grade rail crossing during the morning and afternoon peak hours. That is a substantive increase and conservatively high assumption.

The Site traffic volume assignments associated with the Phase 1 and Phase 2 – Kerr Street Underpass Deferral scenarios are illustrated in Figure 16 and Figure 17. The Future Total traffic volume assignments associated with the Phase 1 and Phase 2 - Kerr Street Underpass Deferral scenarios are illustrated in Figure **18** and **Figure 19**.

10.2.3 Scenario 4 – Kerr Street Underpass Deferral Condition

The last scenario reviewed involved the closure of the Kerr Street at-grade rail crossing, terminating any connection along Kerr Street between the areas south of the Metrolinx rail corridor and north of the rail corridor.

The realization of this scenario would, presumably, involve a decision that the Town of Oakville would make based upon their level of comfort associated with the future conditions associated with the combined operating conditions of Kerr Street along this section and the safety risks associated with maintaining an atgrade rail crossing with increased rail activity and traffic volume activity.

It should be noted that the EA associated with the Kerr Street Underpass project clearly concluded that the underpass was warranted based upon pre-intensification conditions associated with the OPA lands. The deferral by Metrolinx based upon cost considerations has also been made within the context of the risks evaluated in the EA assessment.

The analyses herein does not undertake another risk assessment or exposure index evaluation. The exposure index (the numerical index which, in part, determine the decision to pursue a grade-separation) would, presumably, be just as - if not more so - warranted with increased area traffic volumes associated with intensification of the OPA lands amongst other development projects in the general area.

The existing Kerr Street connection across the Metrolinx rail corridor provides a key municipal link in the overall Town street network as well as within the area Regional network.

The following analyses steps were undertaken in evaluating the possible closure of the Kerr Street at-grade rail crossing scenario:

- Base volumes are consistent with those in the prior analyses conducted by BA Group;
- Existing macro traffic patterns in the general vicinity of the Study Area were assessed using "Streetlight Data" (a proprietary data source that uses cell phone tracking on a macro scale to establish traffic and travel patterns). This data can be used to specify particular routes using their Top Routes database and existing turning movement patterns;
- An example of the routing data obtained is provided in the image below (weekday morning peak period patterns). This establishes the base conditions from which rerouting and diversions are generated.
- The existing traffic volumes on Kerr Street were diverted based on the StreetLight's Top Routes data and existing turning movement patterns.

Streetlight Top Routes Data - sample data - Weekday morning peak period - trips leaving the study area



- Traffic volumes are shifted away from Kerr Street to other North-South (Dorval Drive and Trafalgar Road) and east-west corridors (Highway 403, Speers Road and Rebecca St) based on their proportions and direction of approach during the morning and afternoon peak periods.
- The reassignment of existing traffic volumes, future background traffic volumes and Site traffic volumes creates the Future Total traffic volume scenario that is assessed to understand the operational impacts of the Kerr Street at-grade rail closure.
- The Future Total Scenario selected as a representative condition is the Phase 2 –Kerr Street Underpass Deferral condition with the added condition of the rail crossing closure.

The Future Total traffic volume assignments associated with the Phase 2 – Kerr Street Underpass Deferral condition with the added condition of the rail crossing closure scenarios is illustrated in **Figure 20**.

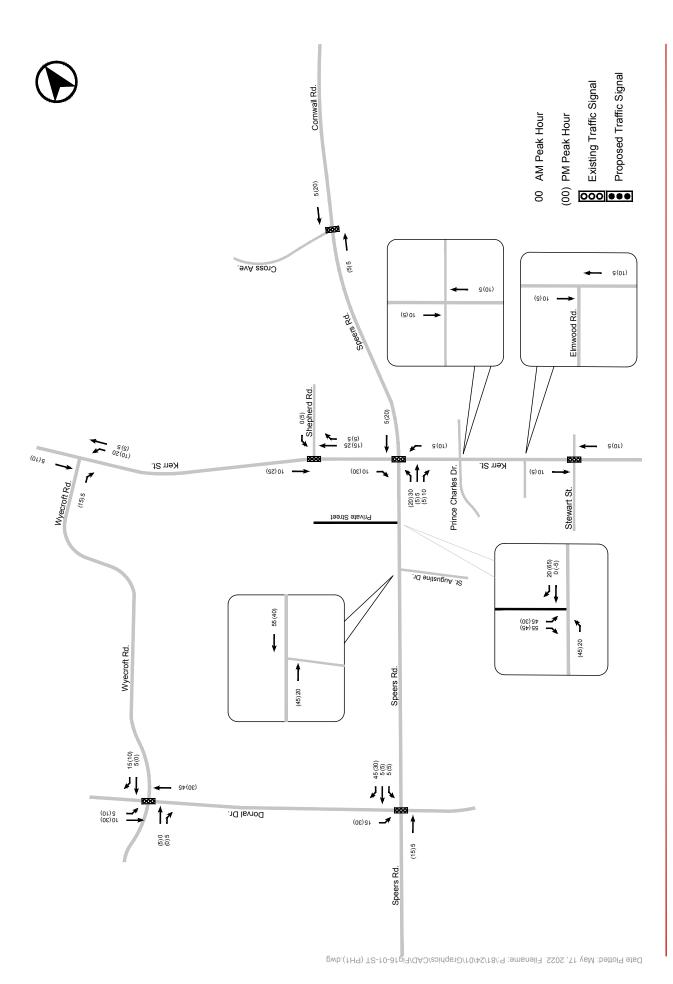


FIGURE 16 NEW SITE TRAFFIC VOLUMES (PHASE 1) - UNDERPASS DEFERRAL ASSIGNMENT

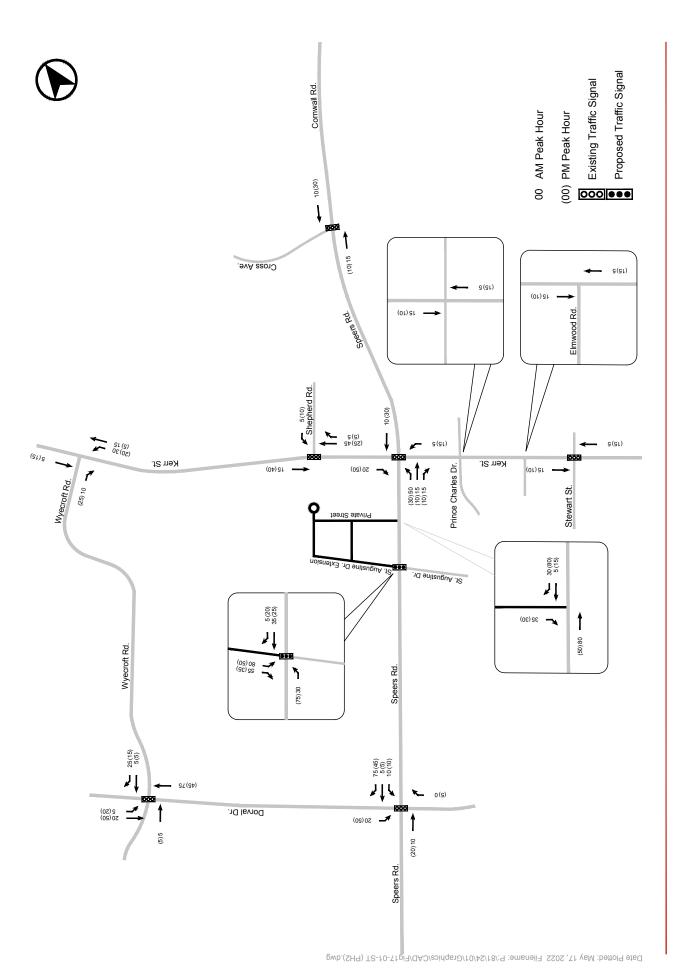


FIGURE 17 NEW SITE TRAFFIC VOLUMES (PHASE 2) - UNDERPASS DEFERRAL ASSIGNMENT

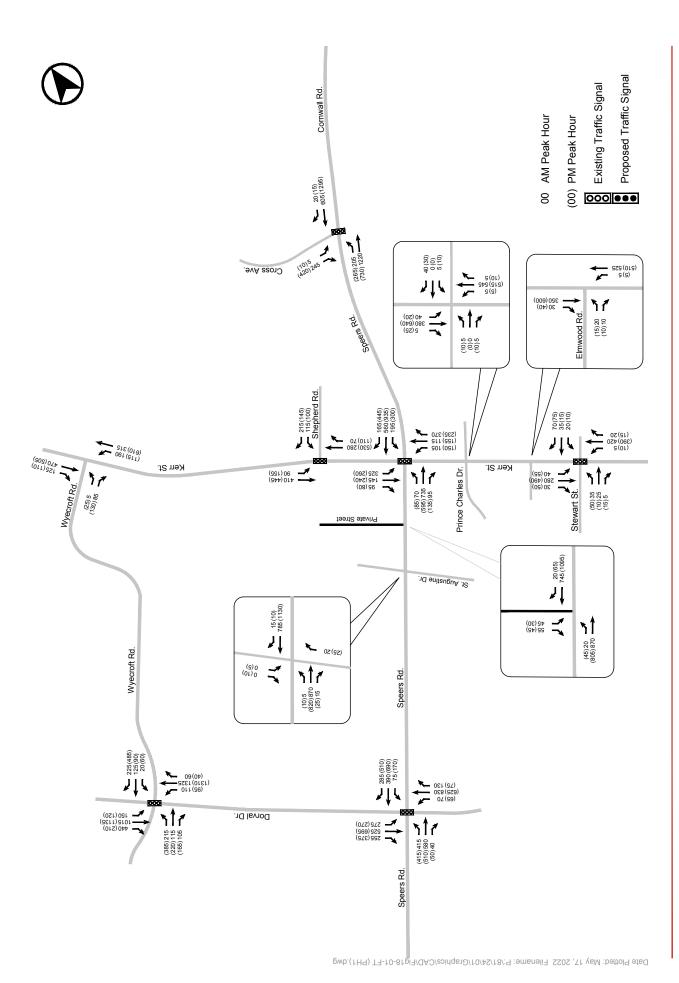


FIGURE 19 FUTURE TOTAL TRAFFIC VOLUMES (PHASE 1) - UNDERPASS DEFERRAL ASSIGNMENT

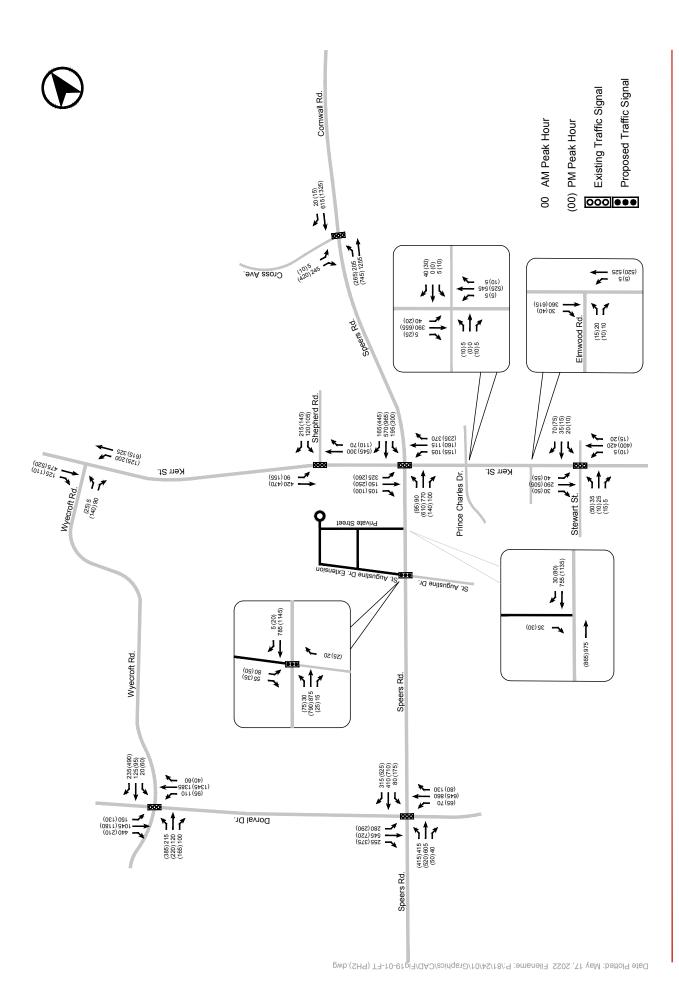


FIGURE 19 FUTURE TOTAL TRAFFIC VOLUMES (PHASE 2) - UNDERPASS DEFERRAL ASSIGNMENT

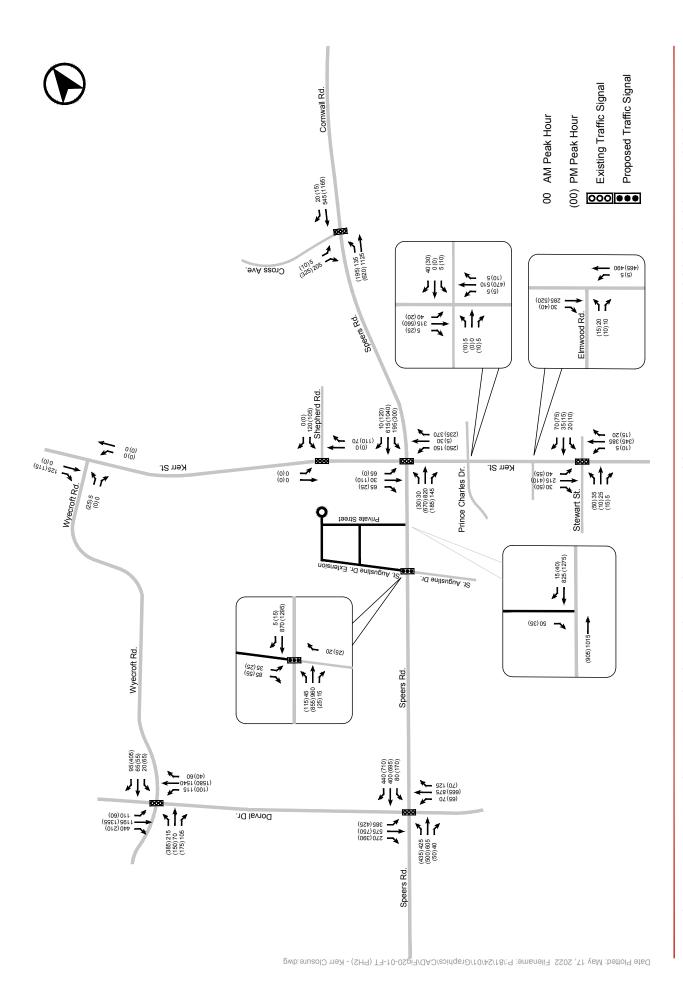


FIGURE 20 FUTURE TOTAL TRAFFIC VOLUMES (PHASE 2) - UNDERPASS DEFERRAL AND RAIL CROSSING CLOSURE ASSIGNMENT

10.3 SUMMARY OF FUTURE OPERATING CONDITIONS FOR THE KERR STREET UNDERPASS DEFERRAL SCENARIOS

10.3.1 **ANALYSES PARAMETERS**

The Synchro analyses conducted herein adopt standard Synchro analyses default parameters similar to the assumptions of the Interim and Ultimate scenarios that included the Kerr Street Underpass condition.

10.3.2 Scenario #1 – Kerr Street Underpass In Place by 2031:

This scenarios represents the analyses conducted and reported upon in Section 9.0 of this report. No further analyses has been undertaken to review this scenario.

10.3.3 Scenarios #2 and #3 – Kerr Street Underpass Deferral Condition

10.3.3.1 **INTERSECTION ANALYSES**

All study area signalized intersections operate within their capacities under this scenarios under both Phase1 and Phase 2 development scenarios described above.

This includes both the "without" and the "with" the planned improvements along Kerr Street scenarios.

This also includes the proposed all-movements unsignalized intersection of Speers Road and the Private Street connection under Phase 1 development scenario. This intersection reverts to a right-in/right-out intersection along Speers Road under the Phase 2 development scenario. It is forecast to operate under good conditions during this scenario.

Under this development and access scenario, the at-grade rail crossing on Kerr Street, with the increased train frequency operation allowed for as described above, functions under good capacity-related operating conditions. The forecast queuing that could result from this future at-grade operating condition, however, could extend back from the crossing by somewhere between 100 to 150 metres (about 14 to 21 vehicle queues). At a reasonable discharge rate (i.e., saturation flow value of around 1,500 veh/hr/lane or roughly 2.4 second headway) the queues (depending on the length) would clear the rail crossing after about 33 to 50 seconds after the rail gates were lifted.

The forecast capacity (v/c) and queuing conditions associated with each intersection is summarized in Appendix I.

It should be noted that the Phase 1 and Phase 2 development scenarios generate a relatively low amount of Net New traffic when compared to the existing development related traffic generated by the current retail plazas and commercial uses across the OPA Lands. In fact the proposed Phase 1 development levels actually generates significantly less traffic than the existing plaza and commercial uses on the OPA lands today. This is, in part, why the overall operating conditions associated with Phase 1 and Phase 2 development and access scenarios operate as they do across the study area network and at the points of access on Speers Road.

TABLE 16 NET NEW OPA LANDS DEVELOPMENT RELATED TRAFFIC SUMMARY – PHASE 1 AND PHASE 2 – KERR STREET UNDERPASS DEFERRAL SCENARIO

Development Scenario	Мс	orning Peak Ho	our	Afternoon Peak Hour		
	Inbound	Outbound	Two-way	Inbound	Outbound	Two-way
Total Future Site Traffic – Phase 1	45	95	140	105	70	175
Total Future Site Traffic – Phase 2	70	165	235	160	105	265
Existing Site Traffic – (Phase 1 equivalent lands)	60	35	95	185	200	385
Existing Site Traffic – (Phase 2 equivalent lands)	80	35	115	205	215	420
Net New Future Site Traffic – Phase 1	-15	60	45	-80	-130	-210
Net New Future Site Traffic – Phase 2	-10	130	120	-45	-110	-155

The recommended lane configurations and public street improvements identified in the following documents and analyses are sufficient to accommodate the development intensification associated with the Draft OPA provisions Phase 1 Kerr Street Underpass Deferral conditions:

- 2009 Kerr Village Transportation Assessment;
- the 2009 Speers Road Environmental Study Report (minus the Kerr Street dual southbound left turn lanes); and,
- the northbound right turn on Dorval at Speers Road.

As with the Interim and Ultimate analyses summarized in Section 9.0 of this report, it is recommended that the northbound right turn on Dorval at Speers Road be carried further for functional design review and costing to improve the overall Speers and Dorval corridors operating characteristics and mitigate any future impacts at the Dorval and Speers signalized intersection.

Furthermore, all other improvements identified in the 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report (minus the Kerr Street dual southbound left turn lanes) and the Kerr Street Grade Separation Proposed Road Improvements should be implemented per prior recommendations to support the Phase 1 and Phase 2 development and access conditions.

In general, the intersections that would remain unsignalized into the future will operate under reasonable good conditions. This includes the Phase 1 access from Speers Road at the Private Street. Level-of-Service of between A and C are forecast. Queuing on Speers Road EB at Kerr would typically not extend back to the Private Street location. Given the existing (and planned) centre median lane, traffic entering the Phase 1 development from the west would have this lane open to them as would traffic exiting the Phase 1 lands to the east (SB left); the SB Left traffic movements could complete a 2-stage outbound manoeuvre to join the EB

flow of traffic. The EB left turn queue at Kerr Street is not forecast to pose any issue in this regard (the local demand for that movement would be reduced with the redevelopment of the OPA Lands).

The Kerr Street / Wyecroft Road unsignalized intersection will start to show signs of longer delays into the future. This intersection should be monitored to determine whether signalization should be implemented. Signals introduced at that Kerr/Wyecroft intersection would operate under reasonably good conditions. The geometric design conditions associated with signalization should be carefully considered given the nature of design vehicles (tractor trailers) using this intersection on a regular basis. Capacity analysis worksheets are contained in Appendix J.

10.3.4 Scenario #4 - Kerr Street Underpass Deferral Condition

This scenario adopts the assumption that the Kerr Street at-grade rail crossing would be closed given the indefinite deferral of the Kerr Street Underpass project.

In this option, the study area network, has had the following traffic redistributed and diverted across the network resulting from the closure of the Kerr Street at-grade rail crossing:

- general area existing traffic;
- future non-OPA lands area development traffic; and,
- proposed Phase 2 development level traffic volumes.

The impacts of these traffic diversions generally results in a less efficient, a less flexible and places undo capacity-constrained conditions on the study area network and particularly at the regional intersection of Dorval and Speers. The expected movements (SB left turn and WB right turn) would experience significantly higher capacity constrained and queuing conditions. These movements would be the logical movements upon which the traffic that would have used the Kerr Street corridor would shift to accomplish similar regional routing patterns.

Kerr Street, north of Speers Road begins to operate as a local street and as an extension of Shepherd Road. It no longer serves as an effective supporting Major Transportation Corridor, as set out in the Town of Oakville's Livable Oakville Urban Structure. Its role providing strategic connections within the Town of Oakville to other Major Transportation Corridors and to Regional Roads would be eliminated.

It would put unnecessary operating pressure on other major corridors in the Town and Region and would cease to provide the balance that is afforded the public street network in the Upper Kerr Village area and the Mid-Town area. Kerr Street would lose the strategic advantages it currently provides.

Closure of the Kerr Street at-grade rail crossing prior to the Kerr Street Underpass project being implemented would also negatively impact the ability for the study area street network to adequately accommodate the planned intensification within the Upper Kerr Village according to the provisions set out in the proposed Draft OPA. Although the intersections in the immediate vicinity of the OPA Lands would continue to operate under acceptable conditions, the reliance on the Regional Road system at Dorval would be compromised.

The capacity implications of this scenario involving the closure of the Kerr Street at-grade rail crossing are illustrated in Appendix I. Given the operating characteristics associated with the Kerr Street at-grade rail crossing under similar development intensity conditions (i.e., Phase 2 – Kerr Street Underpass Deferral scenario with the at-grade rail crossing operational), it is not recommended that the at-grade rail crossing be closed if/when development is phased across the Draft OPA lands. Capacity analysis worksheets are contained in **Appendix J**.

Queuing conditions across the study area network would also reflect reasonable urban operating conditions

As noted in **Section 10.2.3** above, this analyses does not assess the "risk" issue involving the at-grade crossing or its continued operation with elevated volumes of train frequency and vehicular traffic. It has evaluated the operating capacity of the at-grade rail crossing and found that there is capacity remaining at the crossing with allowances for increased train frequency and increased vehicular volumes. The operating conditions – capacity and queuing – appear to be manageable into the foreseeable future (phase 2 horizon of 2036) with the at-grade crossing remaining operational.

11.0 SUMMARY AND CONCLUSIONS

Overview

BA Group has been retained by Urban Strategies Inc. to prepare a transportation impact assessment (TIA) on behalf of April Investments Limited (owner of 588 Kerr Street), 527079 Ontario Limited (owner of 530 Kerr Street), Trans County Development Corporation Limited (owner of 131 Speers Road), and Oakville Developments (2010) Inc. (owner of 550 Kerr Street) (together known as the "landowners"). BA Group prepared a report entitled "Upper Kerr Village, Part 2 Transportation Assessment - Official Plan Amendment - Transportation Considerations Report", dated February 2 2022 (referred to herein as the February 2022 TIS Report). That report supported an Official Plan Amendment (OPA) to permit the redevelopment and intensification of lands municipally addressed 530, 550 and 580 Kerr Street, 131 and 171 Speers Road (together know as the "Subject Site" and that forms a portion of what is referred to as the Upper Kerr Village District) in the Town of Oakville (the "Town"), Halton Region (the "Region").

Since the February 2022 TIS submission, preliminary comments on the February 2022 TIS submission from the Town of Oakville have been received and an announcement by Metrolinx that the Kerr Street Underpass project has been indefinitely deferred has been made.

In response to these two developments, a revised May 2022 TIS report has been prepared. This May 2022 Revised TIS Report incorporates responses to the Town's preliminary comments and the implications of the deferred Kerr Street Underpass project on the OPA.

The portion of the Upper Kerr Village District that forms the subject OPA (referred to herein as the Subject Site) is bounded by Speers Road on the south, Kerr Street on the east, the CN Rail corridor on the north, and the west limit of the property known municipally as 171 Speers Road. The owners of the property at 171 Speers Road are not a direct party to the OPA submission; however, further to Official Plan policies, their lands have been considered in the Comprehensive Development Plan (Proposal) and its proposed future development structure.

The Comprehensive Development Plan and implementing OPA will permit the intensification of the Subject Site. The intensification characteristics are set out in the Draft OPA and associated Schedules.

The Draft OPA and proposed Comprehensive Development Plan is consistent with and conforms to provincial, regional and municipal policies by planning to:

- minimize the number of vehicle trips;
- support the development of viable choices and plans for public transit and other alternative transportation modes;
- provide connectivity amongst modes of transportation as well as a balance of modal choices for users of the system; and,

• be pedestrian and cycling oriented, providing improved connectivity to transit and the Oakville GO Station in Mid-Town.

The Draft OPA provisions incorporate the goals, objectives and policies set out in Part E – Growth Areas, Special Policy Areas and Exceptions, Kerr Village (See **Appendix C**) when establishing the intensification parameters for the overall Block and individual properties.

Part 1 of the complete set of transportation assessments was provided to the Town of Oakville in November 2021. It was a part of the support for the Comprehensive Development Plan and Draft OPA provisions. Part 1 was a high-level overview of the transportation considerations relevant to the Subject Site. This May 2022 TIS report updates the Part 2 Transportation Assessment from February 2022 (incorporating Part 1) and considers the implications of the associated intensification of the Subject Site in detail, responds to preliminary comments from the Town of Oakville Transportation Department, provides an analyses of the Kerr Street Underpass Deferral options as request by the Town of Oakville and provides an analytical assessment of the travel demands, impacts, and mitigation measures, if any, required to support the Draft OPA provisions.

Existing Site Context

- The Subject Site currently exhibits a range of retail, personal business, entertainment and institutional uses.
- The 171 Speers Road property includes an existing cinema use and what was a mixture of retail businesses, personal service businesses and institutional uses (adult learning centre).
- The balance of the Subject Site (i.e., 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr) operates like a
 homogeneous retail plaza with what is configured as retail gross floor area (GFA) situated along the west
 side of the Subject Site, service areas on the west side of the retail GFA and a conventional shared
 parking area between the retail GFA and Kerr Street.
- In total the existing GFA associated with each of the properties include:
 - The 171 Speers Road property is approximately 4,700 square metres (50,600 square feet) of GFA.
 - 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr has approximately 11,724 square metres (126,200 square feet) of GFA.
 - The total existing commercial GFA across the Subject Site is approximately 16,424 square metres (176,800 square feet) of GFA.
- The approved grade separation of Kerr Street and the CN Rail corridor will have the effect of shifting the horizontal alignment of Kerr Street to the west starting approximately half way between Speers Road and Shepherd Road and extending north beneath the CN Rail corridor where it rejoins the existing alignment of Kerr approximately half way between the CN Rail corridor and Wyecroft Road.
 - o This realignment will reduce the future developable lands on a portion of the Subject Site.
 - It will also reconfigure access to the Subject Site (the portion including 131 Speers and 530 Kerr,
 550 Kerr and 588 Kerr) in such a way that the existing northerly unsignalized access driveway would get eliminated and replace with a signalized access opposite Shepherd Road.

- From a mobility perspective, the surrounding areas offer a diverse set of destinations and relationships that would support intensification within the Subject Site.
- The Subject Site is also conveniently located proximate to the Queen Elizabeth Way (QEW) / Highway 403 corridor, linking the Upper Kerr Village Growth Area with destinations east (the Greater Toronto Area) and west (Greater Hamilton Area) of Oakville.
- Indefinite deferral of the Kerr Street Underpass Project, along with the fact that lands have already been expropriated for this purpose, would have the effect restricting development across portions of the 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr properties to varying degrees in order to make provision for the eventual implementation of the Underpass, related Kerr Street improvements and the construction activities required to building the Underpass project and Kerr Street improvements.

Draft OPA and Comprehensive Development Plan

- The Draft OPA for the Subject Site will permit approximately 192,000 square metres of total GFA. This breaks down into approximately 171,300 square metres of residential GFA, 7,915 square metres of retail GFA and 12,720 square metres of above grade parking.
- For the purposes of the transportation assessment this translates into approximately 1,850 residential units.
- The Comprehensive Development Plan for the Subject Site as contemplated within the Draft OPA makes provision for the retention of retail uses along Kerr, Speers and Shepherd with a potential grocery store planned as the corner of Speers Road and Kerr Street.
- The urban structure of the Draft OPA also allows for appropriate accessibility providing important support for the retail viability.
- The Draft OPA also includes important policies relevant to Streets and Parking Subsections i., ii, iii and iv appropriately address the public street extensions of Shepherd and St. Augustine Drive, the introduction of a private local street within the Subject Site, appropriate vehicular parking reduction provisions and the ability to park vehicles below-grade beneath the proposed public park and private street, respectively.
- Furthermore, in light of the Kerr Street Underpass Deferral, additional phasing scenarios associated with the OPA lands have been developed to enable development to incrementally proceed. These include:
 - Phase 1 688 residential units and approximately 2,339 square metres of retail Gross Floor Area (GFA) across only the 131 Speers and 530 Kerr, 550 Kerr and 588 Kerr properties; and,
 - Phase 2 1,158 residential units and approximately 3,319 square metres of retail Gross Floor Area (GFA) across all properties in the OPA Lands; i.e., the 131 Speers and 530 Kerr, 550 Kerr, 588 Kerr and the 171 Speers Road properties.
 - o These phasing options maximize the developable lands available under the Kerr Street Underpass Deferral conditions.

Area Transportation Networks

- Public Street Network
 - Both Speers Road and Kerr Street are Town of Oakville streets and both are considered Major Transportation Corridors according to the Livable Oakville Urban Structure.
 - Both corridors provide strategic connections within the Town of Oakville, connecting to other key Town of Oakville Major Transportation Corridors as well as Regional Roads.
 - As part of the 2009 Kerr Village Transportation Assessment and the 2009 Speers Road Environmental Study Report, improvements in the immediate vicinity of the Upper Kerr Village area were identified for implementation in conjunction with development (intensification) within the Kerr Village Growth Area. These improvements were identified within the context of the planned intensification associated with the overall Kerr Village Growth Area circa 2009.
 - Kerr Street given the grade separation planned for Kerr Street, Kerr will have two through lanes in each direction plus left & right turn lanes at a new signalized intersection at Shepherd;
 - Kerr Street was identified with dual southbound left turn lanes at Speers Road and a dedicated southbound through lane and a dedicated southbound right turn lane;
 - Speers Road was identified as requiring an eastbound right turn lane in addition to the current lane configurations; and,
 - Speers Road was identified as requiring bicycle lanes along its length –to east of Kerr Street.
 - Speers Road is also identified:
 - As a Priority Transit Corridor (Mobility Management Strategy Halton Region);
 - With Transit in semi-exclusive/exclusive right-of-way (Transportation Master Plan Halton Region); and
 - As a Multi-purpose Arterial (Liveable Oakville)
 - The Shepherd Road and St. Augustine Drive extensions through the Comprehensive Development plan area - will augment the existing public street system by linking Kerr Street and Speers Road and offering both intensification related vehicular traffic as well existing corridor related traffic volumes relief from existing busy junctions in the immediate area.

Public Transit Network

- The Subject Site are at the convergence of 5 Oakville Transit routes that all lead to the Oakville GO Station.
 - Combined headways of all 5 routes producing effective headways that result in minutes between routes arriving at the Speers and Kerr intersection.
 - Commuting connections to GO Transit Rail and bus service is centralized at the Oakville GO Station for convenient transfers.
- The Speers and Kerr junction is an extremely convenient focal point that offers residents, guests/visitors, retail patrons and employees a high degree of accessibility.

- An accessible transit service called care-A-van provides door-to-door transportation for persons with disabilities. Anyone unable to use conventional transit service due to their disability is eligible to apply. The service operates within Oakville Transit's operation hours and is available 7 days a week.
- The existing public transit and future enhanced public transit systems will play a significant role in meeting the travel needs of Kerr Village based upon the planned intensification.
- Speers Road in considered a Regional Transit Corridor; and,
- The Upper Kerr Village areas is less than 1 kilometre from the Mid-Town area and the Oakville GO Transit Hub.
- Active Transportation Networks
 - o All area public streets have sidewalks provided on both sides of the streets.
 - There are no existing dedicated cycling facilities along either Speers or Kerr corridors.
 - Both Speers (buffered Bike Lanes) and Kerr (Bike Lanes from Speers to the north) and Shepherd Road (Bike Lanes to the south) are identified to have dedicated cycling facilities along their lengths.
 - Active transportation facilities will offer connections through the Town and to key daily
 destinations. These types of facilities assist in provide the "first mile / last mile" facilities that
 support and encourage non-auto modes of travel for commuting and for daily trip making.

Planning Policy Compliance and Technical Support

- Policy support for the Comprehensive Development Plan and Implementing Draft OPA has broad support
 at various levels of governance including the Provincial Policy Statement and the Growth Plan, the Town
 of Oakville's Official Plan, Livable Oakville
- In the Town's Official Plan, The Upper Kerr Village District is identified as a Growth Area and envisioned as a higher density, transit-supportive, mixed use area.
- The Transportation Assessment herein uses prior supporting technical documents as the basis of comparison for assessing what if any additional mobility improvements are required to accommodate the proposed Comprehensive Development Plan and the Implementing Draft OPA.

Review of Draft OPA Development Context

A review of the proposed Comprehensive Development Plan and implementing Draft OPA including the relevant sections of policy and planning documents identified was undertaken.

- Site Plan Scale of Review
 - At the "Site Plan" scale, the Draft OPA policies and its schedules reflect considerable flexibility to achieve appropriately configured accessibility for pedestrians, cyclists and motor vehicles including Emergency vehicle access and circulation.

- The existing/proposed transportation network including the existing/planned arterial/collector public street system, the proposed Upper Kerr Village public / private Local street network, the existing/planned public transit network, and the planned active transportation network systems – can appropriately support the development levels proposed in the Comprehensive Development Plan.
- The supply of bicycle parking and vehicular parking will be appropriately scaled to support the non-vehicular travel modes while providing appropriate levels of mobility for all residents, visitor and employees of the District.
- The broad benefits of the mixed-use nature of the Comprehensive Development Plan will aid in reducing vehicle trips and maximizing non-vehicular modes.
- A comprehensive set of Transportation Demand Management plan elements will be encouraged to become a part of all development within the Upper Kerr Village District.
- **Development Phasing Review**
 - Development Phasing will be critical from the following perspectives:
 - Coordination of the public and private street infrastructure coincident with the individual development parcels and delivery of the public park (or portions thereof).
 - Given the complexity of such individual development phasing across the Subject Site, phasing plans for each individual development application will need to
 - Demonstrate no adverse impact occurs on the continued operation of remaining existing uses;
 - Demonstrate how the subject development application can be realized without precluding the implementation of the overall development potential outlined in the Comprehensive Development Plan; and,
 - Demonstrate the manner in which infrastructure and parkland will be provided.
 - The 171 Speers Road development parcel is not a direct party to the Draft OPA process, but, nevertheless has been considered in the urban structure, development massing and infrastructure necessary to achieve the Comprehensive Development Plan.
 - A phased implementation of the public and private streets as well as the public park has been considered such that an "Interim" scenario arrangement could be achieved that permits those portions of the Upper Kerr Village district that are located on the 131 Speers and 530 Kerr property, the 550 Kerr property and the 588 Kerr property to move forward with development.
 - A corresponding set of Phasing Scenarios (Phase 1 and Phase 2) have been prepared for the Kerr Street Underpass Deferral conditions as noted above.
 - The existing/proposed transportation network including the existing/planned arterial/collector public street system, the proposed Upper Kerr Village public / private Local street network, the existing/planned public transit network, and the planned active

transportation network systems - can appropriately support the development levels proposed in the Comprehensive Development Plan under these "Interim" development and Phase 1 and Phase 2 scenarios.

Local Area Review

- Assessment of the travel characteristics from an analytical perspective have been assessed in this May 2022 Part 2 Transportation Assessment described Section 8.0 (Ultimate and Interim development conditions with the Kerr Street Underpass project in place) and Section 9.0 (Phase 1 and Phase 2 development scenarios under the Kerr Street Underpass Deferral set of conditions) of this report.
- Planned Public transit and active transportation facilities will feature accessibility characteristics that are consistent with and supportive of policies from various levels of governance.
- The planned public and private streets that form the framework of the Comprehensive Development Plan will facilitate the accessibility of the planned intensification within the Upper Kerr Village District and provide a small measure of relief to certain minor movements within the existing public street network.
- The Transportation Assessment conducted herein reviews these aspects of the proposed public and private street network.

Regional Area Review

o From a regional area perspective, the Draft OPA development potential is consistent with the aforementioned planning documents since it maintains a balance between various modes of transportation accessibility - a balance that, as transit initiatives in the area are enhanced, can be shifted in favour of non-auto modes of travel.

Justification of Intensification within Upper Kerr Village

- Upper Kerr Village is a designated secondary Growth Area within the Town of Oakville
- Substantial Municipal/Regional/Provincial mobility infrastructure investment within general vicinity of Upper Kerr Village and within nearby Mid-Town
- Proximity of Upper Kerr Village to existing and planned multi-modal infrastructure
- Intensifying the residential population of Upper Kerr Village will increase and encourage non-auto trip making for commuters and internalized O-D trips.
- Upper Kerr Village is an excellent location to incorporate Reduced Vehicular Parking Rates to reduce auto-based travel:

Vehicular Analyses - Review of Public Street Capacity and Operating conditions

- BA Group has prepared base existing conditions (2021 conditions modified to ensure Covid-19
 effects have been eliminated) that reflects a pre-Covid-19 conditions to ensure an appropriate basis
 of evaluation.
- Background (non- Subject Site) development related and corridor growth allowances have been included to forecast both 2031 and 2036 future conditions;
- The Subject Site's vehicular traffic forecast has been based upon a combination of standard industry
 related trip generations rates, proxy sites from similar developments in similar environments in the
 GTA and Oakville as well as considering the existing and forecast modal split conditions in the future
 scenarios.
- A combination of the existing, background developments and corridor growth and Subject Site
 vehicular traffic was used as the basis for forecasting operating conditions in the 2031 an 2036 time
 horizons.
- An "Interim" condition where 171 Speers Road lands are assumed to NOT redevelop; and, an
 Ultimate Condition (2036) where the entire Subject Site is assumed to redevelop were analyzed for
 operating conditions sensitivities.
- In addition, development phasing that took into account the Kerr Street Underpass Deferral conditions (due to a recent Metrolinx announcement on project cost escalation) were also reviewed under two scenarios Phase 1 (with development only occurring on the 131 Speers and 530 Kerr property, the 550 Kerr property and the 588 Kerr property which corresponds to the "Interim" development properties above) and Phase 2 (with development occurring on the 131 Speers and 530 Kerr property, the 550 Kerr property, the 588 Kerr property and the 171 Speers Road property which corresponds to the "Ultimate" development properties above).
- The results of the analyses indicate that all Study Area intersections are forecast to operate under acceptable conditions under both Interim and Ultimate scenarios.
- A similar conclusion was reached when considering the Phase 1 and the Phase 2 scenarios that
 considered the Kerr Street Underpass Deferral conditions assuming the at-grade rail crossing on Kerr
 Street remained open during the deferral period.
- Although not analyzed herein, two additional Phases were identified by USI; referred to as Phases 3 and 4 in the Urban Design Brief. These additional Phases demonstrate the delivery of buildings along Kerr Street when the Kerr Street frontage is able to be developed; i.e., at which time the Kerr Street Underpass and related improvements along Kerr Street are completed to the point where development on the west side of Kerr Street could proceed. In part, this is to demonstrate, on a high-level, that the grocery store contemplated for the northwest corner of Kerr Street and Speers Road would have to be delivered during later stages of development.
- If the Kerr Street at-grade rail crossing were to be closed during the Kerr Street Underpass Deferral period, there would both practical and functional constraints placed upon the Study Area public street network; particularly at the Speers Road and Dorval Drive regional signalized intersection. Based

upon the operating conditions - capacity and queuing conditions - there does not appear to be a reason to close the Kerr Street at-grade rail crossing during the Kerr Street Underpass deferral period. This is based upon the operational aspects only. A risk assessment of the at-grade rail crossing under increased trains activity and vehicular volumes has not been carried out as part of this assessment. Presumably, the same or heightened risk conditions would prevail under the Underpass deferral period relative to those conditions that would have been assed by Metrolinx within the Environmental Assessment that was conducted as part of the Kerr Street Grade Separation project.

- The future study area public street network analyzed includes all recommended improvements outlined in the 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report and the Kerr Street Grade Separation Proposed Road Improvements. These continue to be recommended to support the Draft OPA intensification provisions.
- It is recommended that the northbound right turn discussed herein on Dorval at Speers Road be carried further for functional design review and costing in order to improve the overall Speers and Dorval corridors' operating characteristics and mitigate any future impacts at the Dorval and Speers signalized intersection.
- For the Kerr Street Underpass Deferral conditions, the future study area public street network analyzed includes all recommended improvements outlined in the 2009 Kerr Village Transportation Assessment, the 2009 Speers Road Environmental Study Report, minus the southbound dual left turn lane and Kerr Street widening conditions along Kerr Street north of Speers Road. These continue to be recommended to support the Draft OPA intensification provisions for Phase 1 and Phase 2 development scenarios.
- It is also recommended that the northbound right turn discussed herein on Dorval at Speers Road be carried further for functional design review and costing in order to improve the overall Speers and Dorval corridors' operating characteristics and mitigate any future impacts at the Dorval and Speers signalized intersection for the Phase 1 and Phase 2 development scenarios.

Overall Conclusion

Based upon the assessment conducted herein, the Proposal and implementing OPA is an appropriate framework for which to base future intensification of the Upper Kerr Village District.

The operational analyses conducted as part of this May 2022 Part 2 Transportation Assessment indicates that the Draft OPA and the proposed Comprehensive Development Plan densities - and supporting street network, TDM and parking provisions – can be reasonably accommodated within the context of the planned public street system and supporting public transit and active transportation systems. Continued emphasis on Active Transportation and Public Transit planning in the Upper Kerr Village area and the Mid-Town area will further improve mobility options afforded to the planned residential and commercial land uses in Upper Kerr Village.

Similarly, under the Kerr Street Underpass Deferral conditions, development phasing of the OPA lands as described herein, can be appropriately accommodated with the recommended public street improvements.

The Draft OPA and proposed Comprehensive Development Plan is consistent with and confirms to provincial, regional and municipal policies by planning to:

- minimize the number of vehicle trips;
- support the development of viable mobility choices and plans for public transit and other alternative transportation modes;
- provide connectivity amongst modes of transportation as well as a balance of modal choices for users of the system;
- be pedestrian and cycling oriented, providing improved connectivity to transit and the Oakville GO Station;
- anticipate the westerly Shepherd Road extension and the northerly extension of St. Augustine Drive or phasing alternatives to same; and,
- allow for development of the Subject Site to occur gradually and over the long-term in a phased manner which coordinates the provision of transportation infrastructure.

Moreover, the Draft OPA and proposed Comprehensive Development Plan will allow the Upper Kerr District to become a multi-modal – transit and active transportation – supportive mixed-use area.

APPENDIX A:

Town of Oakville Correspondence – Preliminary Comments on February 2022 TIS Report and Town Request for Additional Information on the Impacts of the Kerr Street Underpass Deferral by Metrolinx



Timothy J. Arnott

From: Syed Rizvi <syed.rizvi@oakville.ca>

Sent: April 25, 2022 7:31 AM **To:** Timothy J. Arnott

Cc: Paul Barrette; Jill Stephen

Subject: RE: Upper Kerr Transportation Analysis - "Kerr Street Underpass - Deferred

Indefinitely" Scenario

Hi Tim,

Reference Transportation Impact Study (TIS) submitted in support of OPA application to permit the intensification of Upper Kerr Village lands. The town staff has conducted a preliminary review of the TIS and noticed following deficiencies in Section 7.6 – Site Vehicular Travel Forecasts:

• Table-4: Residential Units Trip Gen Rate

- Site Auto Trips for 1,845 units before applying modal split reduction factor;
- The number of Auto Trips reduced for each travel mode (Transit, Pedestrian, walk, cyclist) by applying trip reduction factor;
- Net Auto trip Gen for the Residential land use;
- o The result of the key study area intersections-Queuing Analysis is not reported in the MOE's Tables (Ref Halton Region/Town of Oakville TIS Guidelines)

Table-5 Retail Land use

- Site Auto Trips for 57,244 sf before applying modal split reduction factor;
- Net Auto Trips Gen for Retail land use;
- Reference/justification for 30% pass-by Trips reduction (ITE /Proxy sites);
- Confirm appropriate LUC for Retail Land use. ITE-LUC 820 Shopping Centre vs ITE- LUC 232 High Rise with Ground Floor Commercial;
- Justification for applying Multi-Modal trip reduction for Retail land use, and 30% pass-by trips (Total 30+39=69% reduction factor)

A set of sample Vehicular Trip Generation tables are attached below for consideration to use in the next TIS submission.

Please feel free to contact for any questions.

Thanks, Syed

Table 5.4: 2026 Site Generated Vehicular Trips

Land Use	Basis/Parameter	Vehicle Trips					
		Weekday A.	M. Peak Hour	Weekday P.M. Peak Hour			
		Inbound	Outbound	Inbound	Outbound		
Senior Living Building (80 Units)	(Senior Adult Housing - Attached) calculated total trips	6	10	12	10		
	Non-Auto Trip Reduction	(1)	(2)	(2)	(2)		
	Total Senior Living Building vehicle trips	4	8	9	8		
Employment Use Building (530,000 ft²)	ITE Land Use 710 (General Office Building) calculated total trips	456	74	89	466		
	Non-Auto Trip Reduction	(96)	(16)	(19)	(98)		
	Total Employment Use Building vehicle trips	360	59	70	368		

Land Use	Basis/Parameter	Vehicle Trips				
		Weekday A.	M. Peak Hour	Weekday P.M. Peak Hour		
		Inbound	Outbound	Inbound	Outbound	
Hotel and Conference Center (210 Units)	ITE Land Use 310 (Hotel) calculated total trips	59	41	67	64	
	Non-Auto Trip Reduction	(12)	(9)	(14)	(14)	
	Total Hotel and Conference Center vehicle trips	46	32	53	51	
Medical Center (research) (220,000 ft²)	ITE Land Use 720 (Medical- Dental Office Building) calculated total trips	351	99	209	538	
	Non-Auto Trip Reduction	(74)	(21)	(44)	(113)	
	Total Medical Center (research) vehicle trips	278	78	165	425	
Total		688	177	298	852	

Table 5.5: 2026 Site Generated Person Trips

	Modal Split Percentage					
Primary Travel Mode	A.M. Pe	ak Hour	P.M. Peak Hour			
	Inbound	Outbound	Inbound	Outbound		
Auto - Driver	79%	79%	79%	79%		
Transit	15%	15%	15%	15%		
Walking and Cycling	6%	6%	6%	6%		
		Computation		7.		
Equivalent Average Auto	1.00	1.00	1.00	1.00		
ITE Trip Generation Raw Trips	872	224	377	1079		
Total Person Trips	872	224	377	1079		
Auto Person Trips	688	177	298	852		
Transit Person Trips	131	34	57	162		
Active Person Trips	52	13	23	65		

Table 6.2: 2021 Future Total Queues at Study Intersections

Intersection / Movement	Available Storage (m)	50th Perce	entile Queues	95th Percentile Queues	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
	Bront	e Road & Dundas S	treet West		
Eastbound Left	97	33	35	54	85
Eastbound Through	192	89	87	105	103
Eastbound Right	84	45	31	82	50
Westbound Left	116	26	28	78	74
Westbound Through	440	77	126	90	145
Northbound Left	130	53	70	82	91
Northbound Through	335	107	202	146	251
Northbound Right	68	1	24	5	39
Southbound Left	160	31	38	73	84
Southbound Through	410	131	60	167	93
Southbound Right	64	1	0	5	7

From: Timothy J. Arnott <Arnott@bagroup.com>

Sent: April 7, 2022 6:01 PM

To: Syed Rizvi <syed.rizvi@oakville.ca>

Cc: Paul Barrette <paul.barrette@oakville.ca>; Jill Stephen <jill.stephen@oakville.ca>; Melanie Hare <mhare@urbanstrategies.com>; Yiwen Zhu <yzhu@urbanstrategies.com>; Ning Lin <nlin@urbanstrategies.com>; Izabela Molendowski <imolendowski@urbanstrategies.com>; Morley, Piper <PMorley@blg.com>

Subject: Re: Upper Kerr Transportation Analysis - "Kerr Street Underpass - Deferred Indefinitely" Scenario

SECURITY CAUTION: This email originated from outside of The Town of Oakville. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Syed, thank you for the direction on the additional analyses associated with the Kerr Street grade separation deferral conditions.

I'll review in more detail with our team and get back to you if we have any questions.

Best regards, Tim Arnott BA Group

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From: Syed Rizvi < syed.rizvi@oakville.ca > Sent: Thursday, April 7, 2022 5:40 PM

To: 'Timothy J. Arnott' <arnott@bagroup.com>

Cc: Paul Barrette < paul.barrette@oakville.ca >; Jill Stephen < jill.stephen@oakville.ca >

Subject: RE: Upper Kerr Transportation Analysis - "Kerr Street Underpass - Deferred Indefinitely" Scenario

Hi Tim,

The following updated TIS scope of work is provided to review the Transportation impacts of the proposed developments under deferred status of the Kerr Street underpass:

- In February 2022, Metrolinx advised the Town of Oakville that the Kerr Street Grade Separation has been deferred indefinitely. At this time, there is no projected construction start date and no confirmation that the grade separation will be proceeding or whether interim or alternative measures (such as the closure of the level crossing) may be required by the Province.
- Therefore, the Upper Kerr Transportation Analysis needs to be updated to review and analyze the transportation impacts of the subject application based on potential conditions of the current level crossing in the horizon years of 2031 and 2036.
- The following scenarios are to be included in the updated TIS:
 - 1. Grade separation in place by 2031
 - 2. Grade separation and associated road widening, intersection improvements, turning lanes, and active transportation infrastructure deferred beyond 2031 and 2036
 - 3. Grade separation deferred beyond 2031 and 2036 but other transportation improvements and signal timing changes are in place. Required infrastructure improvements to support the proposed development to be identified through the TIS.
 - 4. Level crossing is closed and there is no through access along Kerr Street across the existing level crossing
- Under each scenario, identify any transportation network improvements required to support the Upper Kerr
 development, including any interim works. In the absence of those transportation network improvements,
 identify the impacts on the number of units, amount of floor space, and phasing of the Upper Kerr development
 based on available transportation network capacity.
 - o Functional designs of the proposed infrastructure improvements are to be provided
 - o Infrastructure improvements that would impact the future deliverability of a grade separation should not be included in the analyses.
- Under the second and third scenarios, the analysis shall also identify the impacts of the current and expected future increased number of train trips expected along the Lakeshore West Corridor on the trip distribution from the proposed Upper Kerr development, as well as the impacts operations on the town's road network in the vicinity of the proposed Upper Kerr development. Identify the current exposure index and how that changes with the proposed development in place.
- The same study area that was used for the previous version of the TIS is to be used for this updated analysis as well.

Please feel free to contact for any questions.

Thanks, Syed

From: Timothy J. Arnott <arnott@bagroup.com>

Sent: April 5, 2022 4:07 PM

To: Syed Rizvi < syed.rizvi@oakville.ca Cc: Paul Barrette < specific syed.rizvi@oakville.ca <a h

Subject: Re: Upper Kerr Transportation Analysis - "Kerr Street Underpass - Deferred Indefinitely" Scenario

SECURITY CAUTION: This email originated from outside of The Town of Oakville. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hi Syed, thanks for the update.

We're trying to complete the analyses by mid April to stay on track for all of the OPA process deadlines, so if you could get back to me at your earliest convenience I'd really appreciate it.

Thanks, Tim Arnott BA Group

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Subject: RE: Upper Kerr Transportation Analysis - "Kerr Street Underpass - Deferred Indefinitely" Scenario

Hi Tim,

Thanks for providing summary of the Transportation analysis under deferred scenario of the Kerr Street underpass. Due to the complex nature of subject changes I have been directed by senior management to consult Town staff from other departments involved in the project for their input on assumptions illustrated in your email before we start working on the revised scenarios. It is particularly due to some unknowns due to recent changes and we want to make sure we adopt reasonable assumptions regarding development and planning for the Transportation Study.

I am expecting staff feedback on study parameters later this week and I will get back to you as soon as internal review is completed.

Thanks, Syed

Syed Rizvi, M.Sc., P. Eng Transportation Engineer Transportation and Engineering

Town of Oakville | 905-845-6601, ext.3981 | www.oakville.ca

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From: Timothy J. Arnott < <u>Arnott@bagroup.com</u>>

Sent: April 1, 2022 11:55 AM

To: Syed Rizvi <syed.rizvi@oakville.ca>

Subject: Upper Kerr Transportation Analysis - "Kerr Street Underpass - Deferred Indefinitely" Scenario

SECURITY CAUTION: This email originated from outside of The Town of Oakville. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hello Syed, further to our conversation the other day, I provide below a brief summary of the parameters that we'd adopt to review the implications of the "Kerr Street Underpass – Deferred Indefinitely" scenario from a transportation perspective:

- The "Underpass" has not been "cancelled" but rather "deferred indefinitely" which would require the lands that have been expropriated for the underpass, inclusive of those lands that were also identified as being required to construct the Underpass (via easements), need to be set aside and would not form any part of an 'interim" or phased development upon the block of land west of Kerr Street and north of Speers Road that is the subject of the Official Plan Amendment being reviewed presently;
- The lands required for the Underpass have been expropriated by Metrolinx and lands required for the construction of the underpass have also been identified and secured via easement by Metrolinx;
- A portion of the Upper Kerr Village OPA lands could be developed in prior to the Underpass being constructed by adopting portions of the planned OPA network that lay outside of the expropriation lands (and construction easement lands) that would provide anticipated connections to Speers Road (i.e., right-in/right-out connection to Speers Road where there had been a planned interim connection Speers Road prior to the 171 Speers Road lands being developed within the OPA lands.
- Any connections to Kerr Street must respect the future horizontal and vertical alignment conditions planned in conjunction with the Kerr Street Underpass condition, including the future location and alignment of the Kerr Street/Shepherd Road signalized intersection.
- The Speers Road improvements that have been identified in the Speers Road EA reports could be introduced in the absence of the Kerr Street Underpass.
- The planned improvements to Kerr Street, north of Speers Road, (including the SB dual left turn lanes) could be introduced, in part, in advance of the Kerr Street underpass, recognizing that these improvements would likely have to be limited to minimize any "throw-away" costs associated with their implementation as one moves the further north of Speers. The tolerance for any "throw-away" costs are likely influenced by the length of the "deferral" associated with the Underpass implementation; i.e., a long term deferral may increase the tolerance for greater throw-away costs given the duration of benefits. This would be driven by Town of Oakville staff.
- It is assumed that Ker Street would remain a "two-lane" road as it crosses the at-grade rail crossing.
- A functional design of such Kerr Street improvements would be provided to characterize what and how any Kerr Street improvements could be configured.
- It is assumed that given increased train frequencies along the Metrolinx Lakeshore West corridor, the number and duration of disruptions to traffic flow along Kerr Street would increase over time. This would be estimated as part of any analyses that retains the at-grade crossing condition.
- It is assumed that both the 2031 and 2036 conditions would be reviewed for a "deferred indefinitely" Underpass scenario.

These parameters will be confirmed with Town staff early next week following internal Town of Oakville staff review of the above.

Please let me know what may be a convenient time to discuss the outcome of the internal Town staff discussions.

Best regards, Tim

Timothy J. Arnott, MCIP, RPP Principal

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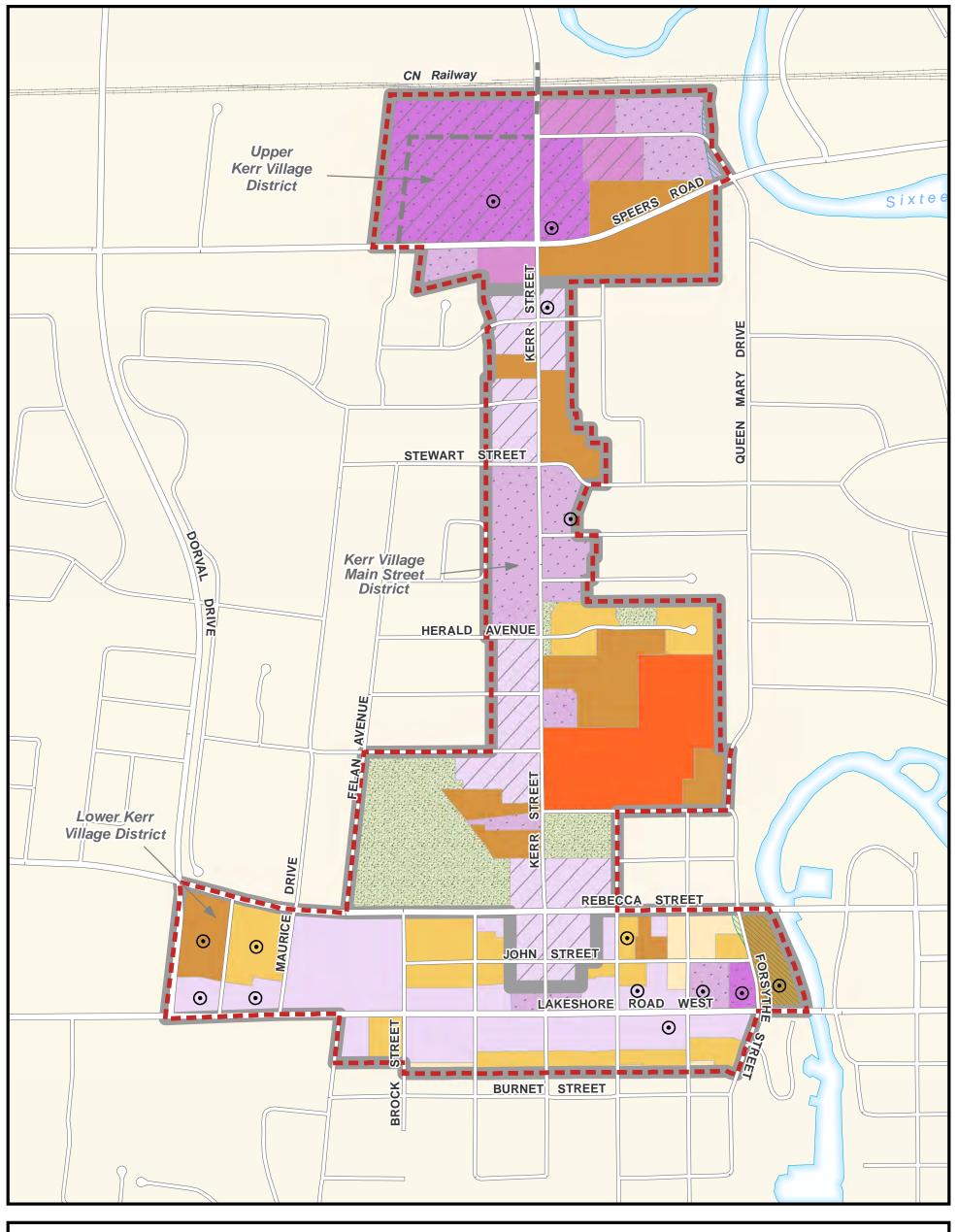


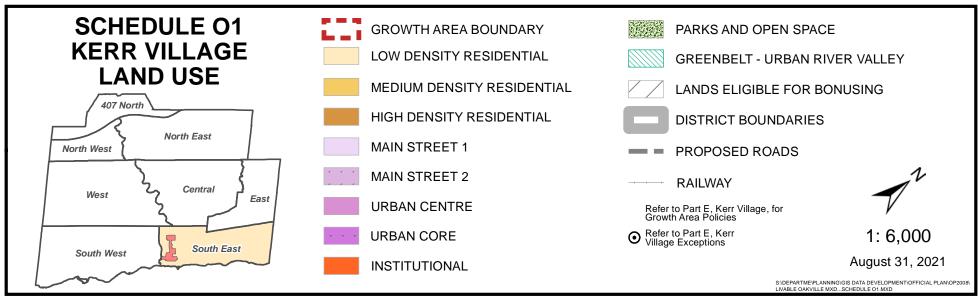


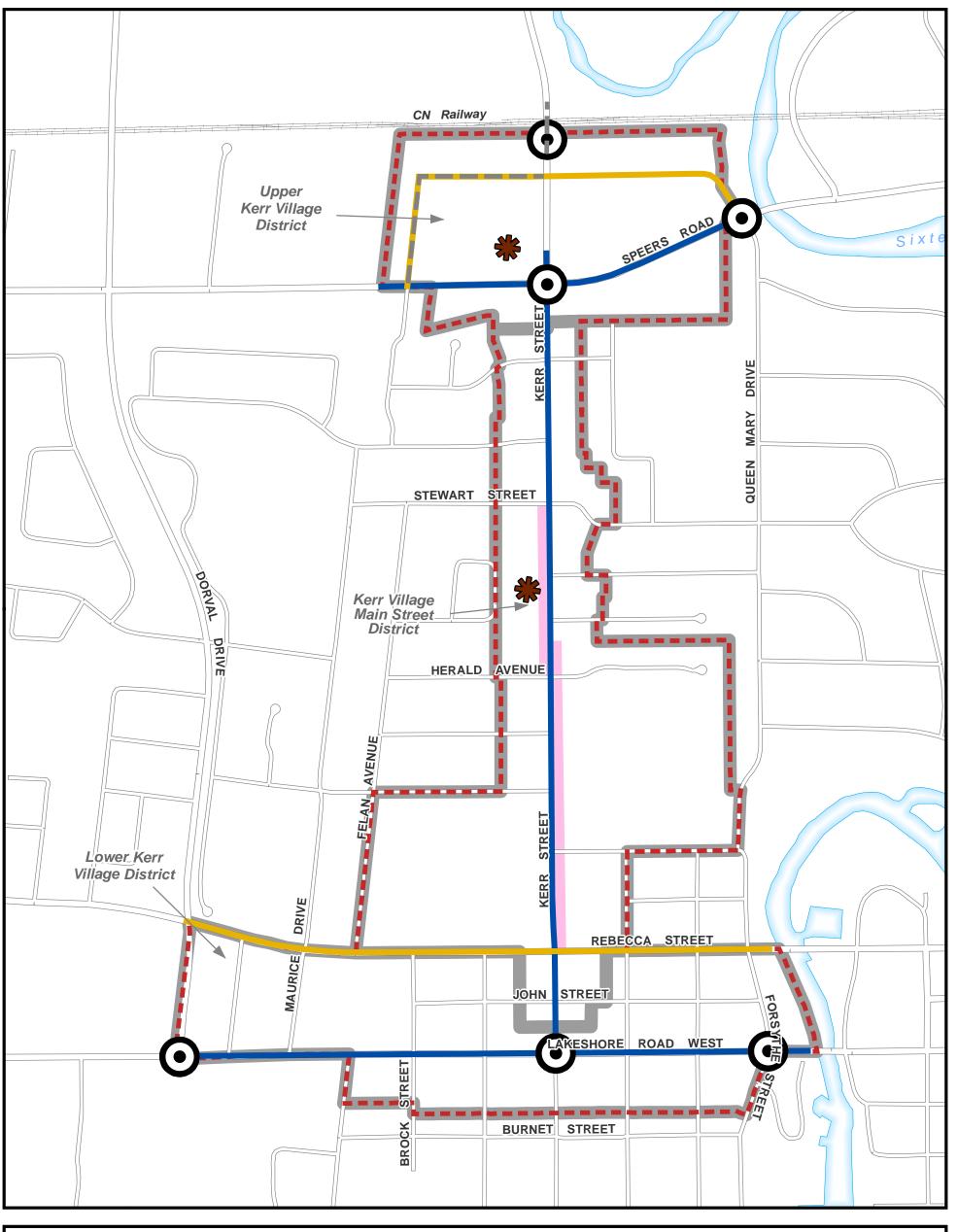
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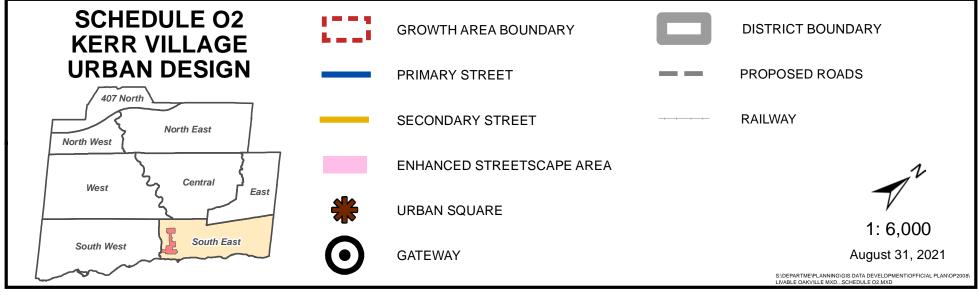
APPENDIX B: Schedules O1 and O2 – Growth Areas, Livable Oakville Plan, August 31, 2021











APPENDIX C:

Kerr Village Excerpts (p. E31 to E42) from Part E: Growth Areas, Special Policy Areas and Exceptions, Livable Oakville Plan, August 31, 2021



23. KERR VILLAGE

Kerr Village, as shown on Schedule O1, is located along the length of Kerr Street, from the railway tracks in the north to just south of Lakeshore Road West in the south. The southerly portion of the village extends along Lakeshore Road West, from Dorval Drive in the west to Sixteen Mile Creek in the east. Kerr Street, and Lakeshore Road West, are the main streets of the village, where a mix of commercial, residential and institutional land uses are found.

Kerr Village will accommodate *intensification* through new *development* and redevelopment, with a mix of residential and commercial uses. The Village will also continue to function as a location for institutional, recreational and public open space uses.

23.1 Goal

Kerr Village will be revitalized as a vibrant business district and cultural area.

23.2 Objectives

As Kerr Village develops, the Town will, through public actions and in the process of reviewing planning applications, use the following objectives to guide decisions.

- 23.2.1 Create opportunities for new, sustainable growth by promoting *compact urban form* with higher density *development* through *compatible development* and redevelopment opportunities.
- 23.2.2 Enhance the mobility of all users with the provision of transit priority measures and increase levels of service through the *development* process by:
 - a) promoting pedestrian and cycling-oriented mixed use *development*, with improved connections to the Downtown as well as the GO train station and proposed employment hub in Midtown Oakville;
 - b) improving circulation, connections and access for cyclists, pedestrians and public transit; and,
 - c) increasing efficiencies for alternate modes of transportation by encouraging *compact urban form*.
- 23.2.3 Create an attractive public realm by:
 - d) promoting high quality streetscapes and open spaces to create a comfortable, accessible and unique community; and,
 - e) ensuring appropriate transitions occur between the main street areas and the lower density residential neighbourhoods.

23.3 Development Concept

Kerr Village is comprised of three land use districts that are structured to provide an appropriate transition in land use and built form between the existing residential areas and any future *development* and redevelopment.

23.3.1 Upper Kerr Village District

The Upper Kerr Village District will become a *transit-supportive* and mixed use area. Higher density forms of *development* are permitted to achieve the critical mass required for enhanced transit. The District will include appropriate gateway features, an urban park with pedestrian mid-block connections and opportunities for *affordable housing*. Employment designations adjacent to the District are to remain, and any new *development* shall incorporate measures to buffer *Employment Areas* from potentially incompatible uses.

23.3.2 Kerr Village Main Street District

The Kerr Village Main Street District will be a predominantly mixed use area along Kerr Street with residential buildings including commercial or office uses at-grade. *Development* shall be set back to allow for pedestrian activity and attractive streetscapes. A gathering point for the community, such as a market, shall be encouraged here.

23.3.3 Lower Kerr Village District

The Lower Kerr Village District shall largely be a mixed use area, allowing for a mixture of commercial, office and residential uses, including some standalone residential uses, extending from Downtown Oakville, with a defined entrance into Kerr Village.

23.4 Functional Policies

In addition to the policies of Parts C and D of this Plan, the following functional policies apply to Kerr Village.

23.4.1 Transportation

- a) The Town will introduce transit service improvements at an early stage in the *development* of Upper Kerr Village District. As the revitalization of this district evolves it will be serviced by the extension of improved transit levels of service, including transit priority measures and *infrastructure* required to create an efficient and attractive transit environment.
- b) Through the *development* process, attractive transit environments are encouraged to include transit passenger amenities, minimal surface parking, and other travel demand management strategies to encourage transit ridership.

c) Parking

- i) Surface parking lots shall be limited. Where surface parking is provided, the visual impact of large surface lots shall be mitigated by a combination of setbacks and significant landscaping including:
 - pavement treatment;
 - low walls or decorative fencing;
 - landscape material; and,
 - trees and lighting throughout parking lots and along the edges.
- ii) Access to parking and servicing areas should not occur from Kerr Street but from local streets, service lanes and to the side or rear of buildings.
- iii) On-street parking shall be maintained throughout Kerr Village with the exception of Speers Road and Kerr Street north of Speers Road. It is the intent that on-street parking shall be permitted at all times.
- d) Bicycle facilities are encouraged throughout Kerr Village with the appropriate signage and infrastructure such as bicycle racks and bicycle lockers.
- e) The feasibility of creating a new or improved east-west pedestrian/cycling connection across Sixteen Mile Creek in the general area of the QEW/Speers Road shall be investigated by the Town.
- f) The redevelopment of Upper Kerr Village District shall anticipate the westerly extension of Shepherd Road and the northerly extension of St. Augustine Drive, with regard for potential redevelopment of adjacent lands.

23.4.2 Minimum Density

A minimum planned density shall be established for Kerr Village through Provincial plan conformity coordinated with Halton Region.

23.5 Urban Design

In addition to the Urban Design policies in section 6 of this Plan, the following policies shall apply specifically to Kerr Village. The urban design plan for Kerr Village is provided on Schedule O2.

23.5.1 General

Development and public realm improvements, including the streetscape for Kerr Street and Lakeshore Road West, shall be evaluated in accordance with the urban design direction provided in the Livable by Design Manual.

23.5.2 Public Realm

Enhanced streetscape areas, as identified on Schedule O2, should be incorporated in the design of new *developments*, streetscapes and open space areas, and utilized as a unifying public realm element through the use of compatible, consistent and complementary design treatments while contributing to a distinctive and unique streetscape. Enhanced streetscape areas may include the preservation of existing large stature trees and open space areas, as well as larger setbacks in built form and the creation of additional pedestrian-oriented spaces.

23.5.3 Streetscapes

- a) Primary and secondary streets, as identified on Schedule O2, shall provide for pedestrian-oriented streetscapes through the use of wide sidewalks, landscaping and furnishings.
- b) Buildings along primary streets, as identified on Schedule O2, shall:
 - i) incorporate a high degree of transparency on the ground floor;
 - ii) provide building openings and principal entrances facing the street; and,
 - iii) contain commercial, community, cultural or limited office uses adjacent to the street which foster an active main street environment.
- c) Buildings along secondary streets, as identified on Schedule O2, should:
 - i) incorporate a high degree of transparency on the ground floor;
 - ii) provide building openings and principal entrances facing the street; and,
 - iii) contain commercial, office, community or cultural uses adjacent to the street which support the main street district, and may also contain residential uses on the ground floor.

23.5.4 Gateways

- a) Through public actions and the *development* process, gateway treatments shall be provided in Kerr Village.
- b) Gateways are identified on Schedule O2 and indicate locations that are visually prominent entry points into Kerr Village. These locations shall provide gateway treatments which may include well designed built form or structures, distinctive streetscape treatments, landscaping, and/or public art. Gateway locations include:
 - i) the future Kerr Street underpass and railway crossing;
 - ii) Speers Road and Kerr Street;

- iii) Speers Road at the Queen Mary Drive bridge;
- iv) Lakeshore Road West and Kerr Street;
- v) Lakeshore Road West and Dorval Drive; and,
- vi) Lakeshore Road West and Forsythe Street.

23.5.5 Urban Squares

- a) Through the *development* process, a new park shall be provided in the Upper Kerr Village District, west of Kerr Street, north of Speers Road.
- b) Heritage Square, located on the west side of Kerr Street opposite Florence Drive, should be a gathering area with hard surfaced and landscaped elements appropriate for an array of public event uses. Built form and land uses surrounding the urban square are to complement and enhance the area.

23.5.6 Built Form

- a) *Development* within the Mixed Use designations south of Speers Road that does not have direct frontage on Kerr Street is encouraged to consolidate with lots that front onto Kerr Street to ensure comprehensive *development*.
- b) Buildings greater than three storeys in height, on lands immediately adjacent to lands designated Residential Low Density, shall be stepped back above the third storey.

23.6 Land Use Policies

Land use designations are provided on Schedule O1. In addition to the policies of Part D of this Plan, the following policies apply specifically to Kerr Village.

- 23.6.1 The lands designated Main Street 2, and known as 21 to 45 Shepherd Road (on the north side) and 20 to 40 Shepherd Road (on the south side), are a transition area subject to the following additional policies:
 - a) Stand-alone Medium Density Residential uses may be permitted.
 - b) The type, size and location of non-residential uses shall be determined through the *development* process and regulated by the implementing zoning.
 - c) Development in the transition area shall:
 - i) enhance the quality of the existing surrounding residential context;
 - ii) contribute to a sensitive transition to the Low Density Residential uses to the south;

- iii) be *compatible* with adjacent, existing *development* with respect to scale, form and *character*; and,
- iv) be sensitive to negative traffic impacts on Queen Mary Drive through access control, restricted parking standards and transit amenities.
- d) On the property known as 21 Shepherd Road, an increase in the size of the standard setback for the *stable top-of-bank* of Sixteen Mile Creek valley may be required for greater protection of the valleylands.
- 23.6.2 The maintenance of a food store in any redevelopment of lands within the Urban Core designation shall be encouraged.
- 23.6.3 On the lands designated Main Street 1 and Main Street 2, residential uses may be permitted on the ground floor, including *multiple-attached dwellings* and apartments, except where adjacent to Lakeshore Road West, Kerr Street and Speers Road, where commercial, community, cultural or limited office uses shall be provided on the ground floor facing the street, to maintain and enhance a pedestrian-oriented main street function.
- 23.6.4 The lands located between the properties designated Main Street 1 south of Lakeshore Road West, and the properties designated Low Density Residential on the north side of Burnet Street, from Brock Street to Forsythe Street, are a transition area, as implemented by the Zoning By-law, and subject to the following additional policies:
 - a) Medium Density Residential uses shall be permitted.
 - b) Limited commercial uses that are non-retail and do not generate major traffic and noise may also be permitted at 79, 82 and 86 Wilson Street. *Development* in the transition area shall:
 - i) enhance the quality of the existing surrounding residential context;
 - ii) contribute to a sensitive transition from the lands to the north of the transition zone with those to the south:
 - iii) be *compatible* with adjacent, existing *development* with respect to scale, form and *character*; and,
 - iv) be sensitive to neighbouring heights, massing, setbacks from the street, distance between buildings, architectural form, colour and materials.
- 23.6.5 The lands subject to the Greenbelt Urban River Valley are a *Greenbelt area* and subject to section 26.5 of this Plan.

23.6.6 On lands north of Lakeshore Road, offices and limited commercial uses which do not generate major traffic and noise may also be permitted as stand-alone uses within existing detached dwellings.

23.7 Kerr Village Exceptions – Schedule O1

The following additional policies apply to certain lands on Schedule O1, Kerr Village Land Use.

- 23.7.1 The lands designated Urban Core at the northwest corner of Speers Road and Kerr Street are subject to the following additional policies:
 - a) As part of any *development* approval, *development* and redevelopment shall be based on a comprehensive development plan which demonstrates the potential full build out of the lands.
 - b) Redevelopment of existing low-rise commercial uses may occur gradually in a phased manner. Notwithstanding the minimum building heights required by this Plan, building additions, alterations and/or replacements may be permitted where they can be demonstrated not to preclude the long-term redevelopment of the properties as set out in this Plan; and,
 - c) On the west side of Kerr Street abutting the railway, any requirement for, and the size and location of, retail, service commercial and office uses on the ground floor of buildings shall be determined through the *development* process and regulated by the implementing zoning.
- 23.7.2 The lands designated Urban Core at the northeast corner of Speers Road and Kerr Street are subject to the following additional policies:
 - a) The *development* shall consist of a maximum of two new buildings up to a maximum height of 19 and 21 storeys respectively with a total of 533 units (excluding the two heritage buildings), conditional on the owner entering into an agreement under section 37 of the *Planning Act*.
 - b) Any site *development* will provide for the relocation and reuse of the existing two heritage buildings on site in accordance with an approved heritage permit.
 - c) The design of the site is intended to create a gateway *development* marking the entrance to Kerr Village. The design is encouraged to incorporate the following urban design elements, which will be detailed further through the implementing zoning and approved site plan:
 - i) a pedestrian-first environment to be promoted through the siting of buildings (new and heritage structures) and the arrangement of driveways, amenity areas, parking areas and pedestrian networks;

- ii) a publicly accessible open space area/square;
- iii) enhanced pedestrian accessibility and connectivity along the Kerr Street and Speers Road frontages as well as through the site;
- iv) retention of the existing heritage buildings on site in a location which maximizes visibility and access;
- v) grade related commercial uses along Speers Road and, to the extent practical, along Kerr Street;
- vi) exclusively underground parking with the exception of a minor amount of short-term parking which may be located at grade;
- vii) a strong focal point at the corner of Kerr Street and Speers Road which incorporates an open space element; and,
- viii) building design that incorporates appropriate street setbacks for building podiums and towers to facilitate height transition.
- 23.7.3 On the lands designated Main Street 1 at the northeast corner of Prince Charles Drive and Kerr Street, a facility containing administrative offices and support services for a privately owned community centre may also be permitted.
- On the lands designated Main Street 2 and known as 70 Stewart Street and 73 Washington Avenue, a maximum building height of four storeys shall be permitted.
- 23.7.5 The lands designated Medium Density Residential and High Density Residential in the general vicinity of Rebecca Street, Garden Drive, and Maurice Drive are subject to the following additional policies:
 - a) On the lands designated Medium Density Residential, only *multiple attached dwellings* may be permitted with a maximum building height of three storeys.
 - b) On the lands designated High Density Residential, only townhouses and apartments may be permitted with a maximum building height of four storeys.
 - c) Redevelopment in accordance with a) and b), above, shall only occur when all of the lands within a *development* block have been acquired for *development* purposes.
 - i) Lands designated High Density Residential, between Dorval and Garden Drives, make up one *development* block.
 - ii) Lands designated Medium Density Residential along Rebecca Street, east of Garden Drive, constitute two *development* blocks.

- iii) The remaining lands designated Medium Density Residential, between Garden Drive and Maurice Drive, make up two *development* blocks:
 - one *development* block fronting Garden Drive, which may be developed for a maximum of 18 *multiple attached dwelling* units and at a maximum density of 53 units per *site hectare*; and,
 - the second *development* block fronting onto Maurice Drive to be developed in accordance with the Medium Density Residential land use and policy provisions of the Plan.
- d) Redevelopment in accordance with a) and b), above, shall only occur upon confirmation of adequate water and wastewater services, the suitability of the adjoining roads to accommodate traffic and the submission of a block plan indicating the integration of the proposed redevelopment within the overall area.
- e) Redevelopment in accordance with a), above, shall be subject to urban design guidelines approved by the Town.
- f) Notwithstanding the above, the lands may continue to be used for the existing single detached dwellings until such time as comprehensive redevelopment occurs.
- 23.7.6 On the lands designated Main Street 1 on the north side of Lakeshore Road, between Dorval Drive and Maurice Drive:
 - a) Retail and service commercial uses, and ancillary residential uses, may be permitted on the ground floor.
 - b) The maximum building height shall be four storeys.
 - c) Redevelopment of the lands between Garden Drive and Maurice Drive shall only occur at such time as all the lands within a *development* block have been acquired for *development* purposes. Lands fronting on to Garden Drive constitute one *development* block, while the remaining lands make up another *development* block.
 - d) Redevelopment in accordance with c), above, shall be subject to the urban design guidelines for the Maurice Drive area.
- On the lands designated Medium Density Residential on the east side of Wilson Street between Rebecca Street and John Street, semi-detached dwellings may be permitted.
- 23.7.8 On the lands designated Main Street 1 located at 43 to 49 Lakeshore Road West, the redevelopment of existing drive-through facilities may occur. Notwithstanding the minimum building heights required by this Plan, building additions, alterations and/or

- replacements may be permitted where they can be demonstrated not to preclude the long-term redevelopment of the properties as set out in this Plan.
- On the lands designated Main Street 1 at the southwest corner of Lakeshore Road West and Chisholm Street, a maximum building height of five storeys may be permitted, conditional on the owner entering into an agreement under section 37 of the *Planning Act*.
- 23.7.10 On the lands designated Main Street 2 at the northeast corner of Lakeshore Road West and Chisholm Street, a maximum building height of six storeys shall be permitted along the John Street frontage.
- 23.7.11 On the lands designated Urban Core at the northwest corner of Lakeshore Road West and Forsythe Street, a maximum building height of 17 storeys may be permitted.
- 23.7.12 On the lands designated High Density Residential at the northeast corner of Lakeshore Road West and Forsythe Street a maximum of 68 apartment units shall be permitted. The maximum building height shall be in accordance with the implementing zoning.

23.8 Implementation Policies

In addition to the policies of Part F of this Plan, the following implementation policies shall apply to Kerr Village.

23.8.1 Phasing/Transition

- a) *Development* will likely occur gradually over the long-term and be co-ordinated with the provision of *infrastructure*, including:
 - i) transit:
 - ii) transportation improvements;
 - iii) water and wastewater services;
 - iv) stormwater management facilities;
 - v) pedestrian and cycling facilities; and,
 - vi) utilities.
- b) The uses and buildings that legally existed prior to the adoption of this Plan may be permitted to continue, however, they are intended to be redeveloped in conformity with this Plan.

23.8.2 Bonusing

- a) The Town may allow the following increases beyond the maximum permitted height in the areas of Kerr Village delineated on Schedule O, without amendment to this Plan:
 - i) up to four storeys on the lands designated Urban Core, north of Speers Road and west of Kerr Street; and,
 - ii) up to two storeys on the remaining lands.
- b) The additional height may be allowed in exchange for the provision of public benefits as listed in section 28.8.2, and with priority given to those public benefits noted in section 23.8.2 d).
- c) The bonusing priorities for Kerr Village include transit and alternative transportation solutions.
- d) Additional public benefits considered appropriate for the application of increased height in Kerr Village may include, but are not limited to:
 - i) the provision of affordable housing units and/or rental housing units;
 - ii) community service/facility space;
 - iii) non-profit child care facilities;
 - iv) public art;
 - v) enhanced streetscape/public open space improvements; and,
 - vi) enhanced green building and energy conservation technology.

23.8.3 Programs and Initiatives

- a) The Town shall prepare a *community improvement plan* for a *community improvement project area* within Kerr Village in accordance with section 28.16 of this Plan and the *Planning Act*.
- b) A program for public art shall be encouraged that:
 - i) reflects the community *character* and history of Kerr Village;
 - ii) includes the artistic design of community infrastructure such as benches, lighting, sidewalks, bus shelters and bike racks; and,
 - iii) may be incorporated in to public and private *developments* as part of the project design.

- b) In the Upper Kerr Village district west of Kerr Street north of Speers Road, an urban park is proposed, which:
 - i) may be located within the site bound by the Shepherd Road extension to the north, Kerr Street to the east, Speers Road to the south and St. Augustine Road extension to the west;
 - ii) may provide public underground parking facilities with a "green roof" at street level forming the urban park portion of the site;
 - iii) may be accessed at street level via mid-block pedestrian connections and from Kerr Street, Speers Road and the north Gateway; and,
 - iv) is encouraged to be maintained through a public-private partnership.

APPENDIX D:

Prior Recommended Public Street Improvements – 2009 Kerr Village Transportation Assessment and the 2009 Speers Road Environmental Study Report excerpts



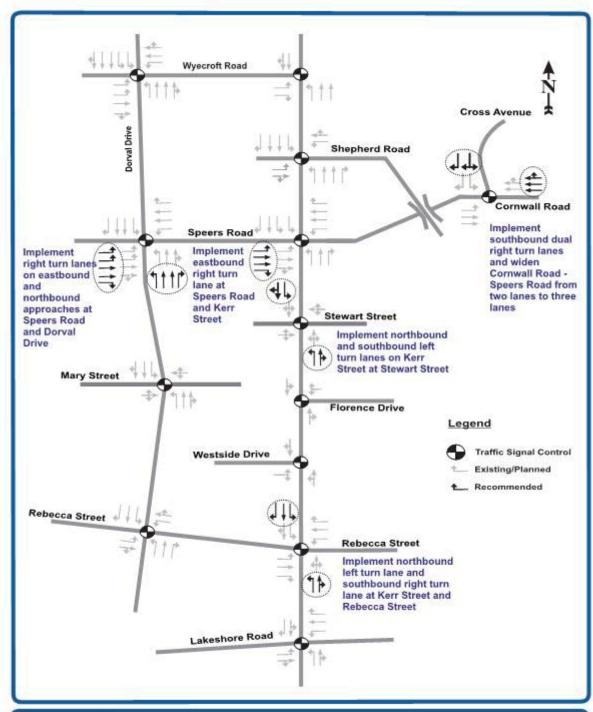




Figure 5.6 Recommended Improvements -2021 Transportation Network Kerr Village Transportation Assessment, Oakville, Ontario







Kerr Street Grade Separation – Proposed Road Improvements – 30% design plans, dated March 25, 2021





APPENDIX F:

Town of Oakville Existing Transit System Map – Kerr Village Growth Area and Surrounding Transit Connections



Town of Oakville Existing Transit System Map - Kerr Village Growth Area and Surrounding Transit Connections

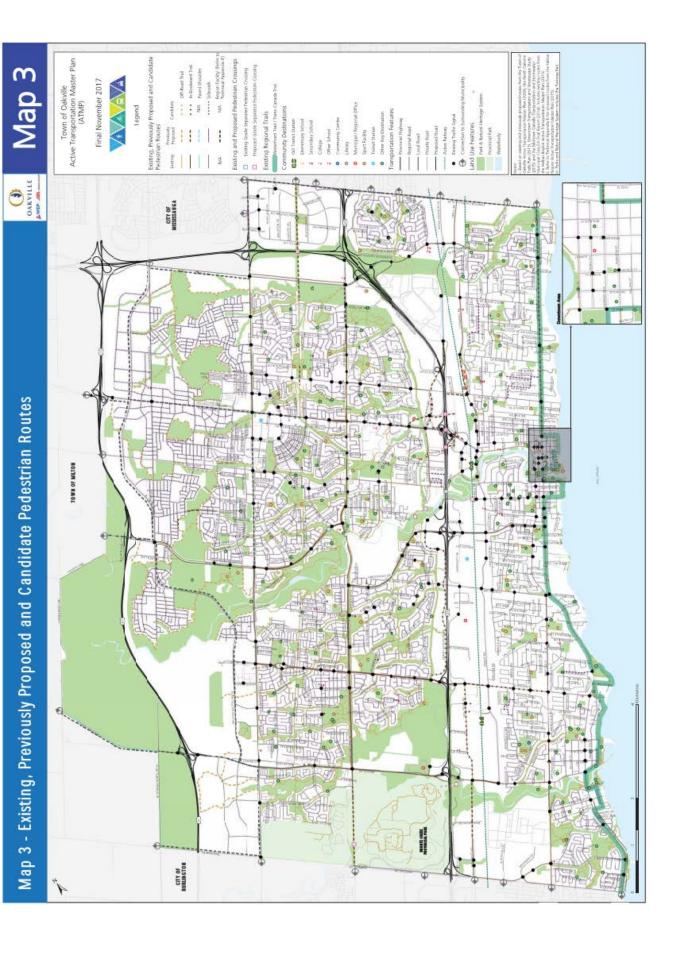


APPENDIX G:

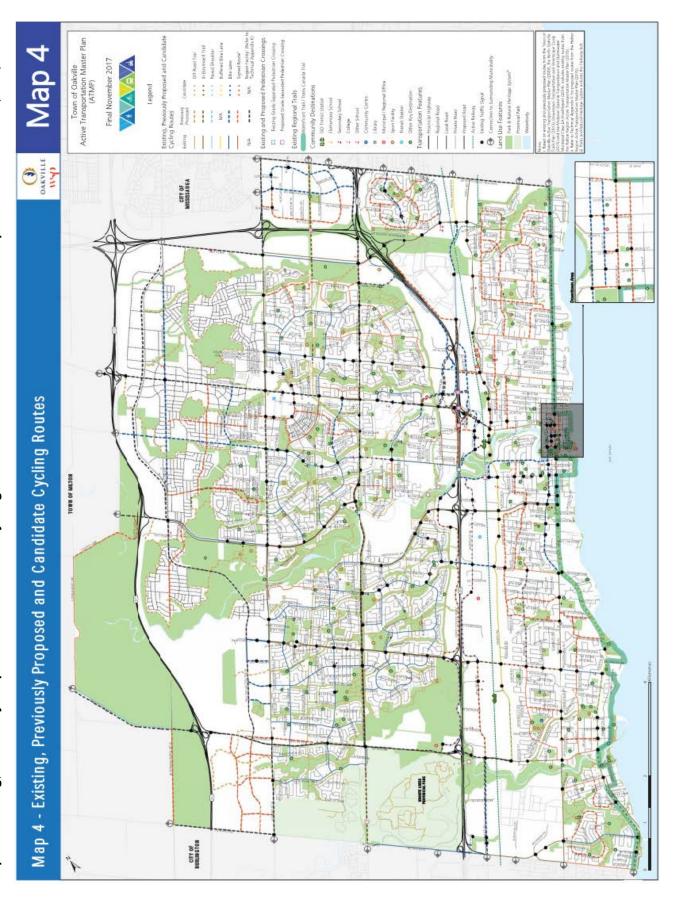
Existing, Previously Proposed and Candidate Pedestrian and Cycling Routes – Town of Oakville Active Transportation Master Plan, Nov 2017



Map 3 - Existing, Previously Proposed and Candidate Pedestrian Routes - Town of Oakville Active Transportation Master Plan, Nov 2017



Map 4 - Existing, Previously Proposed and Candidate Cycling Routes - Town of Oakville Active Transportation Master Plan, Nov, 2017



APPENDIX H: Modal Split Assumptions

Upper Kerr Village 812402 Mode Split BA Group - EFS 2022-05-20

2016 TTS DATA Residential (AM Peak Period) Fri Jan 14 2022 13:17:14 GMT-0500 (Eastern Standard Time)	Гіте)	Residential [PM Peak Period] Tue Jan 18 2022 14:15.22 GMT-0500 (Eastern Standard Time)	500 (Eastern Stand	ard Time)	Retail (AM Peak Perlo <u>d)</u> Sun Jan 30 2022 13:10:05 GMT-0500 (Eastern Standard Time)	-0500 (Eastern Stand	ard Time)	Retail (PM Peak Period) Sun Jan 30 2022 13:11:25 GMT-0500 (Eastern Standard Time)	T-0500 (Eastern	Standard Ti	me)
Frequency Distribution Query Form - Trip - 2016 v1.1		Frequency Distribution Query Form - Trip - 2016 v1.1	n - Trip - 2016 v1.1		Frequency Distribution Query Form - Trip - 2011,2016 v1.1	orm - Trip - 2011,2016	V1.1	Frequency Distribution Query Form - Trip - 2011,2016 v1.1	orm - Trip - 201	1,2016 v1.1	
Field: Primary travel mode of trip - mode_prime		Field: Primary travel mode of trip - mode_prime	mode_prime		Field: Primary travel mode of trip - mode_prime	- mode_prime		Field: Primary travel mode of trip - mode_prime	ip - mode_prime		
Filters:		Filters:			Filters:			Filters:			
2006 GTA zone of origin - gta06_orig In 4009,4012,4013,4011	,4011	2006 GTA zone of origin - gta06_orig In 4009, 4011, 4012, 4013	rig In 4009, 4011,	1012, 4013	2006 GTA zone of destination - gta06_dest In 4009,4012,4013,4011	gta06_dest In 4009,40	112,4013,4011	2006 GTA zone of destination - gta06_dest In 4009,4012,4013,4011	- gta06_dest In 4	4009,4012,40	113,4011
and		and			and			and			
Start time of trip - start_time In 600-859		Start time of trip - start_time In 1500-1759	00-1759		Start time of trip - start_time In 600-1159	00-1159		Start time of trip - start_time In 1500-1759	1500-1759		
and		and			and			and			
Trip purpose of origin - purp_orig In H,		Trip purpose of destination - purp_dest In H,	dest In H,		Trip purpose of destination - purp_dest In M.	p_dest In M,		Trip purpose of destination - purp_dest In M,	urp_dest In M,		
					or			or			
Table: Trip 2016		Table: Trip 2016			(2006 GTA zone of origin - gta06_orig In 4009,4012,4013,4011	_orig In 4009,4012,4	013,4011	(2006 GTA zone of origin - gta06_orig In 4009,4012,4013,4011	06_orig In 4009,4	4012,4013,40	011
Row: Count: Expanded:		Row: Count:	t: Expanded:		and			and			
Transit excluding GO rail 8 203	4%	Transit excluding GO rail	13 397	2%	Start time of trip - start_time In 600-1159	00-1159		Start time of trip - start_time In 1500-1759	1500-1759		
Cycle 3 45	1%	Cycle		%0	and			and			
Auto driver 111 2611	21%	Auto driver	225 5320	%29	Trip purpose of origin - purp_orig In M,)	Jih M,)		Trip purpose of origin - purp_orig In M,)	rig In M,)		
GO rail only 14 234	2%	GO rail only	2 12	%0							
Joint GO rail and local transi 10 158	3%	Joint GO rail and local transi	1 11	%0	Table: Trip 2016			Table: Trip 2016			
Motorcycle 1 6	%0	Auto passenger	35 995	13%	Row: Cou	Count: Expanded:		Row: Q	Count: Expanded:	nded:	
Auto passenger 22 582	13%	School bus		40%	Transit excluding GO rail	4 47	2%	Transit excluding GO rail	2	63	4%
School bus 12 387	8%	Walk	16 349	4%	Cycle	2 73	4%	Auto driver	9/	1214	71%
Paid rideshare 1 26	1%	Total:	317 7926	400%	Auto driver	67 1661	83%	Auto passenger	16	303	18%
Walk 15 316	2%				GO rail only		1%	Taxi passenger	-	53	3%
Total: 197 4568	100%				Auto passenger	9 181	%6	Walk	2	18	2%
					Walk	2 25	1%	Total:	97	1714	100%
					Total:	85 2011	100%				
Driver 57%		Driver	%29		Driver	83%		Driver	71%		
Passenger 13%		Passenger	13%		Passenger	%6		Passenger	21%		
Transit 21%		Transit	16%		Transit	3%		Transit	4%		
Walk 7%		Walk	4%		Walk	1%		Walk	2%		
Cycle 1%		Cyde	%0		Cycle	4%		Cycle	%0		
Total 100%		Total	100%		Total	100%		Total	100%		

APPENDIX I:

Operational Analyses Summary Tables – Signalized and Unsignalized Intersections

Appendix ISignalized Intersection Analysis Summary Indices **Upper Kerr Village Draft OPA Lands**

January 2022

2 Kerr Street & Shepherd I	Road
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_	Exist	ina	Future Bac	karound	Future Total In	torim (2021)	Future Total UI	timata (2026)
Lane Group		_		_				
	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	()	()	()	()	0.35 (0.17)	C (B)	0.41 (0.22)	C (B)
EBTR	()	()	()	()	0.07 (0.04)	C (B)	0.08 (0.05)	C (B)
WBLR	0.52 (0.39)	B (B)	()	()	()	()	()	()
WBL	()	()	0.35 (0.41)	B (B)	0.33 (0.39)	B (B)	0.32 (0.39)	B (B)
WBTR	()	()	0.15 (0.09)	B (B)	0.16 (0.13)	B (B)	0.16 (0.15)	B (B)
NBTR	0.20 (0.40)	A (A)	()	()	()	()	()	()
NBL	()	()	()	()	0.20 (0.37)	B (B)	0.07 (0.14)	B (A)
NBT	()	()	0.23 (0.44)	B (B)	0.26 (0.42)	B (B)	0.26 (0.43)	B (B)
NBR	()	()	0.05 (0.08)	A (A)	0.05 (0.07)	B (A)	0.05 (0.07)	B (A)
SBTL	0.41 (0.51)	A (A)	()	()	()	()	()	()
SBL	()	()	0.17 (0.28)	A (A)	0.19 (0.28)	A (A)	0.19 (0.28)	A (A)
SBT	()	()	0.24 (0.21)	A (A)	0.27 (0.21)	A (A)	0.28 (0.21)	A (A)
SBR	()	()	()	()	0.01 (0.03)	A (A)	0.02 (0.04)	A (A)
Overall	0.52 (0.54)	A (A)	0.34 (0.40)	A (A)	0.34 (0.39)	B (A)	0.35 (0.39)	B (A)

3 Kerr Street & Speers Road

•	Tron On oor a open	o i toda						
Lana Cuasin	Exist	ing	Future Bac	kground	Future Tota	al Interim	Future Tota	l Ultimate
Lane Group	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.10 (0.18)	B (B)	0.14 (0.23)	B (B)	0.29 (0.51)	B (B)	0.14 (0.23)	B (B)
EBTR	0.65 (0.40)	C (C)	()	()	()	()	()	()
EBT	()	()	0.72 (0.39)	C (C)	0.71 (0.38)	C (C)	0.77 (0.40)	C (C)
EBR	()	()	0.07 (0.09)	C (D)	0.07 (0.09)	C (D)	0.07 (0.09)	C (D)
WBL	0.66 (0.63)	C (B)	0.77 (0.66)	C (B)	0.78 (0.64)	C (B)	0.79 (0.67)	D (B)
WBT	0.35 (0.45)	C (C)	0.46 (0.53)	C (C)	0.49 (0.56)	C (C)	0.47 (0.55)	C (C)
WBR	0.14 (0.35)	C (B)	0.15 (0.35)	C (B)	0.14 (0.37)	C (C)	0.15 (0.36)	C (B)
NBL	0.34 (0.56)	D (D)	0.30 (0.52)	C (D)	0.31 (0.53)	C (D)	0.31 (0.54)	C (D)
NBT	0.30 (0.45)	D (D)	0.32 (0.51)	D (D)	0.34 (0.56)	D (D)	0.34 (0.56)	D (D)
NBR	0.81 (0.16)	E (D)	0.87 (0.18)	E (D)	0.88 (0.17)	E (D)	0.88 (0.19)	E (D)
SBL	0.75 (0.69)	C (D)	0.79 (0.82)	E (E)	0.81 (0.84)	E (E)	0.80 (0.82)	E(E)
SBTR	0.42 (0.76)	C (D)	()	()	()	()	()	()
SBT	()	()	0.30 (0.75)	C (D)	0.33 (0.74)	C (D)	0.34 (0.75)	C (D)
SBR	()	()	0.07 (0.05)	C (D)	0.07 (0.04)	C (D)	0.07 (0.04)	C (D)
Overall	0.74 (0.70)	C (C)	0.82 (0.72)	D (C)	0.83 (0.71)	D (C)	0.84 (0.73)	D (C)

4 Dorval Road & Speers Road

T	Dorvar Road & Opc	CIS Modu						
Lane Group	Exist	ing	Future Bac	kground	Future Tota	al Interim	Future Tota	l Ultimate
Lane Group	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.83 (0.82)	E (E)	0.94 (0.92)	E (E)	0.94 (0.91)	E (E)	0.94 (0.97)	E (F)
BTR	0.60 (0.43)	D (C)	()	()	()	()	()	()
BT	()	()	0.64 (0.50)	D (C)	0.69 (0.51)	D (C)	0.70 (0.53)	D (D)
BR	()	()	0.03 (0.03)	C (C)	0.03 (0.03)	C (C)	0.03 (0.03)	C (C)
/BL	0.32 (0.49)	C (C)	0.35 (0.56)	C (D)	0.39 (0.51)	C (D)	0.42 (0.54)	C (D)
/BT	0.52 (0.63)	D (C)	0.61 (0.78)	C (D)	0.64 (0.80)	D (D)	0.65 (0.79)	D (E)
/BR	0.24 (0.84)	C (D)	0.32 (0.74)	B (C)	0.50 (0.78)	B (C)	0.57 (0.77)	B (C)
BL	0.22 (0.26)	C (C)	0.22 (0.28)	C (C)	0.21 (0.28)	C (C)	0.22 (0.29)	C (C)
BTR	0.95 (0.65)	E (D)	0.95 (0.78)	E (D)	0.93 (0.78)	E (D)	0.97 (0.83)	E (D)
BL	0.69 (0.85)	C (D)	0.87 (0.90)	D (E)	0.91 (0.94)	E (E)	0.97 (0.98)	E (F)
BT	0.33 (0.54)	A (B)	0.38 (0.59)	B (B)	0.38 (0.58)	A (B)	0.40 (0.60)	A (B)
BR	0.20 (0.26)	B (A)	0.20 (0.31)	B (A)	0.20 (0.31)	B (A)	0.20 (0.32)	B (A)
verall	0.80 (0.87)	D (C)	0.87 (0.89)	D (D)	0.90 (0.91)	D (D)	0.94 (0.94)	D (D)

5 St. Augustine Drive & Speers Road

Lane Group	Exi	sting	Future Bac	ckground	Future Tota	al Interim	Future Tota	I Ultimate
Lane Group	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	()	()	0.01 (0.03)	A (A)	0.01 (0.03)	A (A)	0.12 (0.34)	A (A)
EBTR	()	()	0.33 (0.29)	A (A)	0.34 (0.29)	A (A)	0.34 (0.27)	A (A)
WBTR	()	()	0.28 (0.38)	A (A)	0.32 (0.38)	A (A)	0.29 (0.38)	A (A)
NBR	()	()	0.01 (0.02)	E(E)	0.01 (0.02)	E (E)	0.01 (0.02)	D (D)
SBL	()	()	(0.09)	(E)	(0.09)	(E)	0.15 (0.16)	D (D)
SBTR	()	()	(0.01)	(E)	(0.01)	(E)	0.11 (0.06)	D (D)
Overall	()	()	0.32 (0.37)	A (A)	0.33 (0.37)	A (A)	0.33 (0.37)	A (A)

Ö	Speers Road/Cornv	vali Road & Cros	s Avenue					
Lana Craun	Exist	ing	Future Bac	kground	Future Tota	al Interim	Future Tota	l Ultimate
Lane Group	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.35 (0.66)	A (B)	0.42 (0.64)	A (C)	0.42 (0.64)	A (C)	0.43 (0.64)	A (C)
EBT	0.46 (0.23)	A (A)	0.49 (0.27)	A (A)	0.50 (0.26)	A (A)	0.51 (0.27)	A (A)
WBTR	0.26 (0.49)	A (A)	0.30 (0.65)	A (C)	0.30 (0.66)	A (C)	0.30 (0.69)	A (C)
SBL	0.05 (0.06)	E (E)	0.04 (0.05)	E (E)	0.04 (0.05)	E(E)	0.04 (0.05)	E(E)
SBR	0.10 (0.45)	E (E)	0.11 (0.61)	E (E)	0.11 (0.61)	E(E)	0.11 (0.62)	E(E)
Overall	0.45 (0.65)	B (B)	0.49 (0.65)	B (C)	0.49 (0.66)	B (C)	0.50 (0.67)	B (C)

9 Kerr Street & Stewart Street

Lane Group	Existi	ing	Future Bac	kground	Future Tota	al Interim	Future Tota	l Ultimate
Lane Group	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBTLR	0.26 (0.29)	C (C)	0.26 (0.29)	C (C)	0.26 (0.29)	C (C)	0.26 (0.29)	C (C)
WBTLR	0.25 (0.16)	C (C)	0.27 (0.16)	C (C)	0.27 (0.16)	C (C)	0.27 (0.16)	C (C)
NBTLR	0.43 (0.33)	A (A)	0.47 (0.37)	A (A)	0.48 (0.37)	A (A)	0.48 (0.39)	A (A)
SBTLR	0.37 (0.53)	A (A)	0.42 (0.59)	A (A)	0.44 (0.58)	A (A)	0.45 (0.59)	A (A)
Overall	0.41 (0.51)	B (A)	0.45 (0.55)	B (A)	0.45 (0.54)	B (A)	0.45 (0.56)	B (A)

10 Dorval Road & Wyecroft Road

10	Dorvar Road a vvyc	oron roda						
Lana Craun	Exist	ing	Future Bac	kground:	Future Tota	al Interim	Future Tota	I Ultimate
Lane Group	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS
EBL	0.60 (0.92)	D (E)	0.60 (0.98)	D (F)	0.60 (0.98)	D (F)	0.60 (0.98)	D (F)
EBTR	0.22 (0.29)	D (C)	0.22 (0.47)	D (D)	0.21 (0.49)	D (D)	0.21 (0.49)	D (D)
WBL	0.11 (0.19)	D (C)	0.11 (0.25)	D (D)	0.11 (0.25)	D (D)	0.10 (0.25)	D (D)
WBTR	0.37 ()	D ()	0.38 ()	D ()	0.43 ()	D ()	0.45 ()	D ()
WBT	(0.22)	(D)	(0.43)	(D)	(0.45)	(D)	(0.45)	(D)
WBR	(0.88)	(E)	(0.89)	(E)	(0.89)	(D)	(0.89)	(D)
NBL	0.51 (0.52)	C (C)	0.54 (0.42)	C (B)	0.55 (0.43)	C (B)	0.56 (0.44)	C (B)
NBTR	0.58 (0.79)	B (C)	0.66 (0.82)	B (D)	0.72 (0.87)	B (D)	0.77 (0.90)	C (D)
SBL	0.44 (0.42)	D (D)	0.44 (0.18)	D (D)	0.45 (0.20)	D (D)	0.46 (0.21)	D (D)
SBTR	0.68 (0.79)	C (D)	0.72 (0.64)	C (C)	0.75 (0.66)	C (C)	0.77 (0.68)	C (C)
Overall	0.60 (0.82)	C (D)	0.62 (0.88)	C (D)	0.64 (0.89)	C (D)	0.66 (0.91)	C (D)

Appendix I

Unsignalized Intersection Analysis Summary Indices Upper Kerr Village Draft OPA Lands

January 2022

1 k	(err	Stree	t &	W١	vecrof	tΒ	load
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Lane Group	Ex	isting	Future E	Background	Future T	otal Interim	Future To	otal Ultimate
Lane Group	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
BLR	B (D)	14.7 (25.7)	()	()	()	()	()	()
BL	()	()	D (D)	28.4 (34.1)	D (E)	33.9 (38.2)	E (E)	36.2 (40.9)
BR	()	()	B (B)	11.3 (12.0)	B (B)	11.5 (12.6)	B (B)	11.6 (12.9)
BL	A (A)	9.6 (9.5)	A (A)	9.9 (9.8)	B (A)	10.2 (10.0)	B (B)	10.3 (10.1)
ВТ	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
BTR	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
BT	()	()	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)

5 St. Augustine Drive & Speers Road

•	ot. / tagaotino bin	ro a opooro rioaa						
Lana Craun	Ex	isting	Future Ba	ackground	Future To	tal Interim	Future To	tal Ultimate
Lane Group	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
EBL	A (A)	8.6 (9.7)	()	()	()	()	()	()
EBT	A (A)	0.0 (0.0)	()	()	()	()	()	()
EBTR	A (A)	0.0 (0.0)	()	()	()	()	()	()
WBT	A (A)	0.0 (0.0)	()	()	()	()	()	()
WBTR	A (A)	0.0 (0.0)	()	()	()	()	()	()
NBR	B (B)	11.7 (11.0)	()	()	()	()	()	()
SBTLR	A (C)	0.0 (18.5)	()	()	()	()	()	()

7 Kerr Street & Prince Charles Drive

Lane Group	Ex	isting	Future E	Background	Future T	otal Interim	Future To	otal Ultimate
Lane Group	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
EBTLR	C (C)	18.0 (24.4)	C (D)	18.9 (26.9)	C (D)	19.3 (26.2)	C (D)	19.7 (26.9)
WBTLR	C (C)	15.2 (18.4)	C (C)	15.9 (19.8)	C (C)	16.1 (19.6)	C (C)	16.2 (20.0)
NBTLR	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)
SBTLR	A (A)	1.6 (0.6)	A (A)	1.6 (0.6)	A (A)	1.6 (0.6)	A (A)	1.6 (0.6)

8 Kerr Street & Elmwood Road

Lane Group	Exi	isting	Future B	ackground	Future T	otal Interim	Future To	otal Ultimate
Lane Group	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
EBLR	C (C)	16.5 (17.4)	C (C)	16.2 (19.0)	C (C)	16.0 (18.8)	C (C)	16.2 (19.2)
NBTL	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)
SBTR	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)

11 Speers Road & Interim Connection

Lane Group	Exis	sting	Future B	ackground	Future To	otal Interim	Future To	tal Ultimate
Lane Group	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
EBT	()	()	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
WBT	()	()	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
WBTR	()	()	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)	A (A)	0.0 (0.0)
SBR	()	()	A (A)	0.0 (0.0)	A (A)	9.5 (9.6)	A (A)	0.0 (0.0)

Signalized Intersections Analysis Results Kerr Street & Shepherd Road Future Total (Phase 1) Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 2) Future Total (Phase 2) With Kerr St Improvements Without Kerr St Improvements With Kerr St Improvements Without Kerr St Improvements Kerr St Closure V/C LOS V/C LOS LOS LOS LOS 0.34 (0.40) WBL 0.34 (0.40) B (B) B (B) 0.35 (0.41) B (B) 0.35 (0.41) B (B) 0.46 (0.44) B (B) 0.15 (0.10) WBTR 0.15 (0.10) B (B) B (B) 0.15 (0.10) B (B) 0.15 (0.10) B (B) -- (--) -- (--) NBT 0.23 (0.40) B (B) 0.23 (0.40) B (B) 0.25 (0.41) B (B) 0.25 (0.41) B (B) -- (--) -- (--) NBR 0.05 (0.07) 0.05 (0.07) A (A) 0.05 (0.07) 0.05 (0.07) 0.05 (0.07) A (A) A (A) A (A) A (A) SBL A (A) 0.17 (0.27) 0.17 (0.27) 0.17 (0.27) 0.17 (0.27) A (A) A (A) A (A) -- (--) -- (--) SBT 0.23 (0.21) A (A) 0.23 (0.21) A (A) 0.23 (0.22) A (A) 0.23 (0.22) A (A) -- (--) -- (--) Overall 0.32 (0.37) A (A) 0.32 (0.37) A (A) 0.33 (0.39) A (A) 0.33 (0.39) A (A) 0.20 (0.18) B (A) 3 Kerr Street & Speers Road Future Total (Phase 2) Future Total (Phase 2) Future Total (Phase 1) Future Total (Phase 1) Future Total (Phase 2) With Kerr St Improvements Without Kerr St Improvements With Kerr St Improvements Without Kerr St Improvements Kerr St Closure LOS LOS LOS LOS V/C EBL 0.24 (0.29) B (B) 0.23 (0.29) B (B) 0.31 (0.34) C (B) 0.29 (0.34) C (B) 0.09 (0.13) B (B) EBT 0.75 (0.39) C (C) 0.73 (0.39) C (C) 0.80 (0.41) D (C) 0.78 (0.41) D (C) 0.60 (0.46) C (C) EBR 0.08 (0.09) C (D) 0.08 (0.09) B (D) 0.08 (0.09) C (D) 0.08 (0.09) C (D) 0.13 (0.13) B (D) 0.72 (0.65) 0.73 (0.67) 0.53 (0.64) WBL 0.77 (0.65) C (B) C (B) 0.78 (0.67) D (B) C (B) B (B) 0.45 (0.56) 0.49 (0.58) 0.35 (0.57) WBT 0.47 (0.56) C (C) C (C) C (C) 0.48 (0.58) C (C) B (B) WBR 0.13 (0.32) C (B) 0.13 (0.32) C (B) 0.13 (0.32) C (B) 0.13 (0.32) C (B) 0.01 (0.08) B (B) NBL 0.32 (0.55) C (D) 0.35 (0.55) C (D) 0.32 (0.56) C (D) 0.36 (0.56) C (D) 0.56 (0.68) D (D) NBT D (D) 0.30 (0.49) D (D) 0.36 (0.52) D (D) 0.30 (0.48) 0.35 (0.52) D (D) 0.12 (0.01) D (C) NBR 0.87 (0.19) E (D) 0.84 (0.17) E (D) 0.87 (0.20) E (D) 0.83 (0.17) E (D) 0.42 (0.17) D (C) SBL 0.76 (0.77) E (E) 0.73 (0.75) C (D) 0.76 (0.77) E (E) 0.73 (0.74) C (D) 0.26 (0.00) D (A) SBT 0.28 (0.72) C (D) 0.30 (0.72) C (D) 0.29 (0.73) C (D) 0.30 (0.73) C (D) 0.13 (0.43) D (D) SBR 0.07 (0.06) C (D) 0.07 (0.06) C (D) 0.08 (0.07) C (D) 0.08 (0.07) C (D) 0.05 (0.02) D (D) 0.78 (0.72) D (C) 0.82 (0.71) D (C) 0.58 (0.69) Overall 0.81 (0.70) D (C) 0.77 (0.71) C (C) C (C) Dorval Road & Speers Road 4 Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 2) Future Total (Phase 1) Future Total (Phase 2) With Kerr St Improvements With Kerr St Improvements Without Kerr St Improvements Without Kerr St Improvements Kerr St Closure V/C LOS LOS LOS LOS LOS EBL 0.94 (0.92) E (E) 0.94 (0.92) E (E) 0.94 (0.99) E (F) 0.94 (0.99) E (F) 0.96 (1.05) F (F) EBT 0.64 (0.50) D (C) 0.64 (0.50) D (C) 0.70 (0.52) D (D) 0.70 (0.52) D (D) 0.71 (0.50) D (D) EBR 0.03 (0.03) C (C) WBL 0.35 (0.49) C (D) 0.35 (0.49) C (D) 0.37 (0.52) D (D) 0.37 (0.52) D (D) 0.37 (0.50) C (D) 0.65 (0.79) WBT 0.62 (0.78) 0.65 (0.79) 0.64 (0.79) 0.62 (0.78) C (D) C (D) D (E) D (E) D (D) 0.51 (0.80) 0.76 (1.11) WBR 0.44 (0.80) B (C) 0.44 (0.80) B (C) C (D) 0.51 (0.80) C (D) D (F) 0.22 (0.29) 0.22 (0.30) NBL 0.22(0.29)C (C) C (C) 0.22(0.29)C (C) 0.22 (0.29) C (C) C (C) **NBTR** 0.96 (0.80) E (D) 0.96 (0.80) E (D) 0.97 (0.83) E (D) 0.97 (0.83) E (D) 0.98 (0.84) E (D) SBL 0.94 (0.91) 0.94 (0.91) 0.99 (0.97) 0.99 (0.97) 1.35 (1.41) E (E) E (E) E (F) E (F) F (F) SBT 0.39 (0.59) B (B) 0.39 (0.59) B (B) 0.41 (0.60) B (B) 0.41 (0.60) B (B) 0.43 (0.62) B (B) SBR 0.20 (0.31) B (A) 0.20 (0.31) B (A) 0.20 (0.31) B (A) 0.20 (0.31) B (A) 0.21 (0.34) C (A) 0.90 (0.90) Overall 0.90 (0.90) D (D) D (D) 0.95 (0.93) D (D) 0.95 (0.93) D (D) 1.17 (1.27) E (E) 5 St. Augustine Drive & Speers Road Future Total (Phase 2) Future Total (Phase 1) Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 2) With Kerr St Improvements Without Kerr St Improvements With Kerr St Improvements Without Kerr St Improvements Kerr St Closure LOS LOS LOS V/C LOS V/C V/C LOS V/C EBL 0.01 (0.03) 0.01 (0.03) A (A) 0.07 (0.22) A (A) 0.07 (0.22) A (A) 0.12 (0.40) A (A) A (A) **EBTR** 0.34 (0.29) A (A) 0.34 (0.29) A (A) 0.37 (0.29) A (A) 0.37 (0.29) A (A) 0.39 (0.30) A (A) WBTR 0.33 (0.41) A (A) 0.33 (0.41) 0.35 (0.45) 0.30 (0.38) A (A) 0.30 (0.38) A (A) A (A) A (A) NBR 0.01 (0.02) E (E) 0.01 (0.02) E (E) 0.01 (0.02) D (D) 0.01 (0.02) D (D) 0.01 (0.02) D (D) SBL 0.00 (0.09) A (E) 0.00 (0.09) A(E) 0.53 (0.45) D (E) 0.53 (0.45) D (E) 0.33(0.28)D (E) SBTR 0.00 (0.01) A (E) 0.00 (0.01) A (E) 0.04 (0.02) D (D) 0.04 (0.02) D (D) 0.06 (0.04) D (D) 0.33 (0.37) 0.33 (0.37) A (A) 0.38 (0.41) 0.38 (0.41) 0.38 (0.44) Overall A (A) A (A) A (A) A (A) 6 Speers Road/Cornwall Road & Cross Avenue Future Total (Phase 2) Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 2) Future Total (Phase 1) With Kerr St Improvements Without Kerr St Improvements With Kerr St Improvements Without Kerr St Improvements Kerr St Closure LOS EBL 0.42 (0.64) 0.42 (0.64) 0.42 (0.64) 0.42 (0.64) 0.26 (0.55) A (C) A (C) A (C) A (C) A (A) EBT 0.49 (0.26) A (A) 0.49 (0.26) A (A) 0.51 (0.27) A (A) 0.51 (0.27) A (A) 0.46 (0.21) A (A) WBTR 0.29 (0.65) A (C) 0.29 (0.65) A (C) 0.30 (0.67) A (C) 0.30 (0.67) A (C) 0.26 (0.48) A (A) SBL 0.04 (0.05) E (E) 0.04 (0.05) E (E) 0.04 (0.05) E (E) 0.04 (0.05) E (E) 0.05 (0.07) E (E) SBR 0.11 (0.61) 0.11 (0.61) 0.11 (0.61) 0.11 (0.61) 0.09 (0.18) E (E) E (E) E (E) E (E) E (E) 0.50 (0.66) 0.49 (0.65) B (C) 0.49 (0.65) B (C) 0.50 (0.66) B (C) B (C) 0.45 (0.53) B (B) Overall Kerr Street & Stewart Street 9 Future Total (Phase 2) Future Total (Phase 1) Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 2) With Kerr St Improvements Without Kerr St Improvements With Kerr St Improvements Without Kerr St Improvements Kerr St Closure V/C LOS LOS LOS LOS V/C LOS 0.26 (0.29) **EBLTR** 0.26 (0.29) C (C) 0.26 (0.29) C (C) 0.26 (0.29) C (C) 0.26 (0.29) C (C) C (C) 0.27 (0.16) 0.27 (0.16) WBLTR 0.27 (0.16) C (C) C (C) 0.27 (0.16) C (C) 0.27 (0.16) C (C) C (C) **NBLTR** 0.47 (0.36) A (A) 0.47 (0.36) A (A) 0.47 (0.37) A (A) 0.47 (0.37) A (A) 0.43 (0.32) A (A) **SBLTR** 0.41 (0.56) A (A) 0.41 (0.56) A (A) 0.42 (0.58) A (A) 0.42 (0.58) A (A) 0.34 (0.49) A (A) 0.41 (0.47) B (A) B (A) Overall 0.44 (0.53) B (A) 0.44 (0.53) B (A) 0.44 (0.54) 0.44 (0.54) B (A) Dorval Road & Wyecroft Road 10 Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 1) Future Total (Phase 2) Future Total (Phase 2) Without Kerr St Improvements Kerr St Closure With Kerr St Improvements Without Kerr St Improvements With Kerr St Improvements V/C LOS LOS LOS LOS LOS EBL 0.60 (0.98) 0.60 (0.98) D (F) 0.60 (0.98) 0.60 (0.98) D (F) 0.60 (0.98) D (F) D (F) D (F) **EBTR** 0.21 (0.48) D (D) 0.21 (0.48) D (D) 0.21 (0.47) D (D) 0.21 (0.47) D (D) 0.16 (0.42) D (D) WBL 0.11 (0.25) D (D) 0.11 (0.25) D (D) 0.11 (0.25) D (D) 0.11 (0.25) D (D) 0.12 (0.31) D (D) 0.40 (0.44) 0.42 (0.45) 0.23 (0.40) WBT 0.40 (0.44) 0.42 (0.45) D (D) D (D) D (D) D (D) D (E) 0.00 (0.90) 0.00 (0.89) 0.00 (0.84) WBR 0.00(0.90)0.00 (0.89) A (D) A (E) A(E) A (D) A (D) 0.56 (0.43) 0.56 (0.44) 0.56 (0.44) 0.59 (0.49) NBL 0.56 (0.43) C (B) C (B) C (B) C (B) C (B) 0.74 (0.91) **NBTR** 0.70 (0.87) B (D) 0.70 (0.87) B (D) B (D) 0.74 (0.91) B (D) 0.74 (0.92) B (D) 0.44 (0.18) D (D) 0.44 (0.18) D (D) 0.44 (0.19) D (D) 0.44 (0.19) D (D) 0.37 (0.09) D (D) SBL 0.75 (0.65)

0.77 (0.68)

0.65 (0.91)

0.39 (0.50)

0.39 (0.45)

0.31 (0.39)

Future Total (Phase 2)

With Kerr St Improvements

C (C)

C (D)

LOS

A (A)

A (A)

A (A)

C (C)

C (D)

LOS

A (A)

A (A)

A (A)

0.77 (0.68)

0.65 (0.91)

0.39 (0.50)

0.39 (0.45)

0.31 (0.39)

Future Total (Phase 2)

Without Kerr St Improvements

C (C)

C (D)

LOS

A (A)

A (A)

A (A)

0.79 (0.69)

0.66 (0.90)

V/C

-- (--)

-- (--)

0.00 (0.00)

C (C)

C (D)

LOS

-- (--)

-- (--)

A (A)

Future Total (Phase 2)

Kerr St Closure

SBTR

14

NBT

SBT

Overall

Overall

0.75 (0.65)

0.64 (0.90)

V/C

0.37 (0.49)

0.38 (0.43)

0.30 (0.38)

Kerr Street & Rail Track Future Total (Phase 1)

With Kerr St Improvements

C (C)

C (D)

LOS

A (A)

A (A)

A (A)

0.64 (0.90)

0.37 (0.49)

0.38 (0.43)

0.30 (0.38)

Future Total (Phase 1)

Without Kerr St Improvements

Unsignalized Intersections Analysis Results

1	Kerr Street & Wye									
	Future Total		Future Total		Future Total		Future Total		Future Total	
	With Kerr St In		Without Kerr St		With Kerr St In		Without Kerr St		Kerr St C	Closure
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
BL	28.9 (32.3)	D (D)	28.9 (32.3)	D (D)	30.5 (34.8)	D (D)	30.5 (34.8)	D (D)	8.9 (9.0)	A (A)
BR	11.1 (12.0)	B (B)	11.1 (12.0)	B (B)	11.2 (12.3)	B (B)	11.2 (12.3)	B (B)	()	()
NBL	9.8 (9.7)	A (A)	9.8 (9.7)	A (A)	9.9 (9.8)	A (A)	9.9 (9.8)	A (A)	()	()
•	Kerr Street & Prin	ce Charles Drive	е							
	Future Total	(Phase 1)	Future Total	(Phase 1)	Future Total	(Phase 2)	Future Total	(Phase 2)	Future Total	(Phase 2)
	With Kerr St In	nprovements	Without Kerr St	Improvements	With Kerr St In	nprovements	Without Kerr St	Improvements	Kerr St C	Closure
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
BLTR	18.8 (25.6)	C (D)	18.8 (25.6)	C (D)	19.1 (26.2)	C (D)	19.1 (26.2)	C (D)	19.3 (22.2)	C (C)
NBLTR	15.8 (19.2)	C (C)	15.8 (19.2)	C (C)	15.9 (19.5)	C (C)	15.9 (19.5)	C (C)	15.5 (17.3)	C (C
NBLTR	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)
BLTR	1.6 (0.6)	A (A)	1.6 (0.6)	A (A)	1.6 (0.6)	A (A)	1.6 (0.6)	A (A)	1.6 (0.6)	A (A)
3	Kerr Street & Elm	wood Road								
	Future Total	(Phase 1)	Future Total	(Phase 1)	Future Total	(Phase 2)	Future Total	(Phase 2)	Future Total	(Phase 2)
	With Kerr St In	nprovements	Without Kerr St	Improvements	With Kerr St In	nprovements	Without Kerr St	Improvements	Kerr St C	Closure
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
BLR	16.4 (18.3)	C (C)	16.4 (18.3)	C (C)	16.3 (18.7)	C (C)	16.3 (18.7)	C (C)	16.9 (16.4)	C (C)
IBLT	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.2 (0.2)	A (A)	0.1 (0.2)	A (A)
1	Speers Road & In	terim Connectio	n							
	Future Total	(Phase 1)	Future Total	(Phase 1)	Future Total	(Phase 2)	Future Total	(Phase 2)	Future Total	(Phase 2)
	With Kerr St In	nprovements	Without Kerr St	Improvements	With Kerr St In	nprovements	Without Kerr St	Improvements	Kerr St C	Closure
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
BL	9.0 (11.0)	A (B)	9.0 (11.0)	A (B)	()	()	()	()	()	()
SBL	14.3 (18.7)	B (C)	14.3 (18.7)	B (C)	()	()	()	()	()	(
SBR	9.3 (9.7)	A (A)	9.3 (9.7)	A (A)	9.1 (9.6)	A (A)	9.1 (9.6)	A (A)	10.1 (10.2)	В (В

	alysis Results									
2	Kerr Street & Shepherd Roa Future Tota	ad al (Phase 1)	Future Tot	al (Phase 1)	Future Tot	al (Phase 2)	Future Tot	al (Phase 2)	Future Total	al (Phase 2)
		Improvements	Without Kerr S	St Improvements		Improvements		t Improvements	Kerr St	Closure
WDI	50th Percentile Queues		50th Percentile Queues	95th Percentile Queues	50th Percentile Queues		50th Percentile Queues		50th Percentile Queues	95th Percentile Queues
WBL WBTR	9.3 (7.6) 0.0 (0.0)	23.0 (20.9) 0.0 (0.0)	9.3 (7.6) 0.0 (0.0)	23.0 (20.9) 0.0 (0.0)	9.7 (8.0) 0.0 (0.0)	23.9 (21.6) 0.0 (0.0)	9.7 (8.0) 0.0 (0.0)	23.9 (21.6) 0.0 (0.0)	6.4 (5.5) ()	18.2 (16.0) ()
NBT	8.5 (16.6)	16.3 (31.9)	8.5 (16.6)	16.3 (31.9)	9.3 (17.3)	17.5 (33.5)	9.3 (17.3)	17.5 (33.5)	()	()
NBR	0.0 (0.0)	4.9 (7.6)	0.0 (0.0)	4.9 (7.6)	0.0 (0.0)	4.9 (7.6)	0.0 (0.0)	4.9 (7.6)	0.0 (0.0)	0.0 (0.0)
SBL SBT	2.4 (4.1) 6.7 (7.1)	6.8 (11.2) 13.4 (14.8)	2.4 (4.1) 6.7 (7.1)	6.8 (11.2) 13.4 (14.8)	2.4 (4.2) 7.0 (7.7)	6.9 (11.5) 14.0 (16.1)	2.4 (4.2) 7.0 (7.7)	6.9 (11.5) 14.0 (16.1)	()	()
301	0.7 (7.1)	13.4 (14.6)	6.7 (7.1)	13.4 (14.6)	7.0 (7.7)	14.0 (16.1)	7.0 (7.7)	14.0 (16.1)	()	()
3	Kerr Street & Speers Road									
		al (Phase 1) Improvements		al (Phase 1) St Improvements		al (Phase 2) Improvements		al (Phase 2) t Improvements	Future Tota Kerr St	al (Phase 2)
		95th Percentile Queues		95th Percentile Queues	50th Percentile Queues			95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	6.8 (10.9)	15.0 (22.0)	6.7 (10.9)	15.0 (22.0)	9.5 (11.8)	19.4 (26.0)	9.5 (11.8)	19.4 (26.0)	2.6 (2.9)	8.6 (6.5)
EBT EBR	102.9 (55.5)	123.0 (81.6)	102.9 (55.5)	123.0 (81.6)	111.0 (53.1)	130.2 (94.4)	111.0 (53.1)	130.2 (94.4)	51.5 (58.2)	136.1 (98.0)
WBL	1.6 (9.4) 31.7 (33.2)	6.4 (21.0) 68.1 (57.7)	1.6 (9.4) 29.7 (33.2)	6.4 (21.0) 66.3 (57.7)	1.5 (8.8) 31.8 (34.1)	7.9 (20.0) 76.2 (68.0)	1.5 (8.8) 29.8 (34.1)	7.9 (20.0) 74.1 (68.0)	0.8 (10.3) 20.1 (34.1)	12.3 (21.5) 37.1 (48.2)
WBT	63.2 (81.9)	80.8 (119.8)	60.0 (81.9)	80.8 (119.8)	65.8 (87.8)	82.5 (128.5)	62.3 (87.8)	82.5 (128.5)	49.2 (96.4)	70.8 (114.8)
WBR	0.0 (0.0)	13.6 (19.3)	0.0 (0.0)	13.6 (19.3)	0.0 (0.0)	13.6 (20.2)	0.0 (0.0)	13.6 (20.2)	0.0 (0.0)	0.0 (9.2)
NBL NBT	15.8 (26.8) 24.9 (34.9)	24.1 (39.3) 39.1 (51.8)	16.8 (26.8) 26.8 (34.9)	24.1 (39.3) 39.1 (51.8)	15.7 (27.4) 24.8 (35.6)	24.1 (39.5) 39.1 (52.6)	16.7 (27.4) 26.7 (35.6)	24.1 (39.5) 39.1 (52.6)	31.8 (47.0) 7.0 (0.8)	42.6 (72.1) 14.4 (3.8)
NBR	61.0 (1.6)	97.0 (22.2)	47.7 (0.0)	75.5 (20.1)	61.3 (2.5)	98.3 (22.9)	47.8 (0.0)	75.8 (19.7)	6.2 (0.0)	30.2 (18.0)
SBL	44.3 (32.6)	56.1 (47.8)	61.8 (50.1)	73.7 (67.3)	44.3 (32.6)	56.1 (47.8)	61.6 (49.4)	73.7 (65.8)	13.1 (0.0)	20.8 (0.0)
SBT	28.0 (56.8)	40.3 (78.7)	29.4 (56.8)	40.3 (78.7)	28.8 (58.9)	41.5 (80.6)	30.2 (58.9)	41.5 (80.6)	6.9 (24.3)	13.8 (41.9)
SBR	0.0 (0.0)	9.7 (12.4)	0.0 (0.0)	9.7 (12.4)	0.0 (0.0)	10.3 (13.4)	0.0 (0.0)	10.3 (13.4)	0.0 (0.0)	9.4 (0.0)
4	Dorval Road & Speers Roa									
		al (Phase 1) Improvements		al (Phase 1) St Improvements		al (Phase 2) Improvements		al (Phase 2) t Improvements	Future Tota Kerr St	al (Phase 2)
	50th Percentile Queues			95th Percentile Queues		95th Percentile Queues		95th Percentile Queues	50th Percentile Queues	95th Percentile Queues
EBL	54.8 (59.7)	85.1 (91.8)	54.8 (59.7)	85.1 (91.8)	54.8 (59.7)	85.1 (91.8)	54.8 (59.7)	85.1 (91.8)	56.4 (65.2)	88.1 (97.8)
EBT	71.4 (56.6)	79.0 (73.1)	71.4 (56.6)	79.0 (73.1)	74.3 (57.5)	83.0 (74.6)	74.3 (57.5)	83.0 (74.6)	74.5 (55.1)	83.0 (71.6)
EBR WBL	0.0 (0.0) 5.2 (29.2)	0.0 (0.0) 7.8 (53.4)	0.0 (0.0) 5.2 (29.2)	0.0 (0.0) 7.8 (53.4)	0.0 (0.0) 9.2 (33.9)	0.0 (0.0) 17.7 (63.0)	0.0 (0.0) 6.9 (33.9)	0.0 (0.0) 17.7 (63.0)	0.0 (0.0) 14.2 (35.1)	0.0 (0.0) 13.1 (38.3)
WBT	33.2 (77.8)	42.6 (108.5)	37.3 (77.8)	42.6 (108.5)	56.0 (89.1)	75.4 (120.2)	55.9 (89.1)	75.4 (120.2)	51.7 (90.4)	65.4 (84.3)
WBR	18.6 (42.3)	34.2 (87.4)	26.7 (42.3)	34.2 (87.4)	34.7 (52.8)	63.4 (115.0)	43.2 (52.8)	63.4 (115.0)	62.5 (126.6)	98.4 (204.2)
NBL NBTR	8.3 (9.1) 123.9 (86.0)	19.6 (17.7) 165.4 (108.8)	8.3 (9.1) 123.9 (86.0)	19.6 (17.7) 165.4 (108.8)	8.5 (9.2) 129.7 (90.1)	19.6 (17.7) 174.3 (113.5)	8.5 (9.2) 129.7 (90.1)	19.6 (17.7) 174.3 (113.5)	8.4 (9.1) 131.6 (91.9)	19.6 (17.7) 177.2 (115.6)
SBL	30.4 (30.6)	141.0 (100.9)	30.4 (30.6)	141.0 (100.9)	37.1 (47.1)	143.3 (118.8)	37.1 (47.1)	143.3 (118.8)	104.4 (127.2)	206.8 (194.7)
SBT	35.4 (63.5)	45.6 (28.0)	35.4 (63.5)	45.6 (28.0)	38.9 (62.5)	46.8 (31.2)	38.9 (62.5)	46.8 (31.2)	45.9 (70.6)	62.5 (45.6)
SBR	10.1 (6.4)	16.4 (3.2)	10.1 (6.4)	16.4 (3.2)	10.9 (4.6)	15.0 (4.1)	10.9 (4.6)	15.0 (4.1)	14.2 (12.1)	26.5 (3.5)
5	St. Augustine Drive & Spee	rs Road								
		al (Phase 1)		al (Phase 1)		al (Phase 2)		al (Phase 2)		al (Phase 2)
	With Kerr St 50th Percentile Queues	Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues	It Improvements 95th Percentile Queues	With Kerr St 50th Percentile Queues	Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues	t Improvements 95th Percentile Queues	Kerr St 50th Percentile Queues	Closure 95th Percentile Queues
EBL	0.2 (0.2)	0.3 (0.3)	0.2 (0.2)	0.3 (0.3)	0.8 (2.2)	1.6 (3.2)	0.8 (2.2)	1.6 (3.2)	1.3 (2.5)	1.9 (1.7)
EBTR	16.4 (9.6)	20.3 (8.8)	16.4 (9.6)	20.3 (8.8)	15.0 (12.8)	21.8 (13.4)	15.0 (12.8)	21.8 (13.4)	16.9 (9.4)	17.8 (3.4)
WBTR	48.0 (90.6)	55.4 (2.0)	31.6 (90.6)	55.4 (2.0)	36.6 (101.3)	48.2 (138.6)	20.0 (101.3)	48.2 (138.6)	17.5 (117.3)	20.3 (67.7)
NBR SBL	0.0 (0.0) 0.0 (1.2)	0.0 (0.0) 0.0 (5.3)	0.0 (0.0) 0.0 (1.2)	0.0 (0.0) 0.0 (5.3)	0.0 (0.0) 20.8 (11.9)	0.0 (0.0) 35.4 (24.0)	0.0 (0.0) 20.8 (11.9)	0.0 (0.0) 35.4 (24.0)	0.0 (0.0) 9.2 (6.0)	0.0 (0.0) 19.4 (14.9)
SBTR	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	6.0 (4.9)
6	Speers Road/Cornwall Roa	d & Cross Avenue								
0		al (Phase 1)	Future Tot	al (Phase 1)	Future Tot	al (Phase 2)	Future Tot	al (Phase 2)	Future Total	al (Phase 2)
		Improvements		t Improvements		Improvements		t Improvements	Kerr St	
EBL	50th Percentile Queues 9.4 (29.5)	95th Percentile Queues 14.5 (65.9)	50th Percentile Queues 9.4 (29.5)	95th Percentile Queues 14.5 (65.9)	50th Percentile Queues 9.4 (33.4)	95th Percentile Queues 14.5 (70.2)	50th Percentile Queues 9.4 (33.4)	95th Percentile Queues 14.5 (70.2)	50th Percentile Queues 5.9 (7.7)	95th Percentile Queues 9.3 (14.0)
EBT	44.7 (21.0)	53.4 (36.2)	44.7 (21.0)	53.4 (36.2)	46.8 (21.8)	55.7 (37.3)	46.8 (21.8)	55.7 (37.3)	39.2 (14.3)	45.4 (21.3)
WBTR	33.1 (120.8)	43.1 (161.1)	33.1 (120.8)	43.1 (161.1)	33.8 (128.8)	44.0 (166.8)	33.8 (128.8)	44.0 (166.8)	27.7 (66.1)	35.3 (99.9)
SBL SBR	1.6 (2.6) 0.0 (21.2)	5.7 (7.8) 11.7 (40.0)	1.6 (2.6) 0.0 (21.2)	5.7 (7.8) 11.7 (40.0)	1.6 (2.6) 0.0 (21.9)	5.7 (7.8) 11.7 (40.7)	1.6 (2.6) 0.0 (21.9)	5.7 (7.8) 11.7 (40.7)	1.6 (2.7) 0.0 (1.9)	5.8 (8.3) 11.1 (17.8)
OBIT	0.0 (21.2)	11.7 (40.0)	0.0 (21.2)	11.7 (40.0)	0.0 (21.0)	11.7 (40.7)	0.0 (21.0)	11.7 (40.7)	0.0 (1.0)	11.1 (17.0)
9	Kerr Street & Stewart Stree	t								
	Future Tota									
	With Kerr St	al (Phase 1)		al (Phase 1)		al (Phase 2)		al (Phase 2)		al (Phase 2)
		al (Phase 1) Improvements 95th Percentile Queues	Without Kerr S	al (Phase 1) St Improvements 95th Percentile Queues	With Kerr St	al (Phase 2) Improvements 95th Percentile Queues	Without Kerr S	al (Phase 2) t Improvements 95th Percentile Queues	Future Tota Kerr St 50th Percentile Queues	
EBLTR	50th Percentile Queues 9.6 (8.5)	Improvements 95th Percentile Queues 15.4 (16.5)	Without Kerr S 50th Percentile Queues 9.6 (8.5)	st Improvements 95th Percentile Queues 15.4 (16.5)	With Kerr St 50th Percentile Queues 9.6 (8.5)	Improvements 95th Percentile Queues 15.4 (16.5)	Without Kerr S 50th Percentile Queues 9.6 (8.5)	t Improvements 95th Percentile Queues 15.4 (16.5)	Kerr St 50th Percentile Queues 9.6 (8.5)	Closure 95th Percentile Queues 15.4 (16.5)
WBLTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4)	95th Percentile Queues 15.4 (16.5) 16.8 (13.0)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4)	Closure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0)
	50th Percentile Queues 9.6 (8.5)	Improvements 95th Percentile Queues 15.4 (16.5)	Without Kerr S 50th Percentile Queues 9.6 (8.5)	st Improvements 95th Percentile Queues 15.4 (16.5)	With Kerr St 50th Percentile Queues 9.6 (8.5)	Improvements 95th Percentile Queues 15.4 (16.5)	Without Kerr S 50th Percentile Queues 9.6 (8.5)	t Improvements 95th Percentile Queues 15.4 (16.5)	Kerr St 50th Percentile Queues 9.6 (8.5)	Closure 95th Percentile Queues 15.4 (16.5)
WBLTR NBLTR SBLTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0)	25th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1)
WBLTR NBLTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3)	95th Percentile Queues 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7)	95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1)
WBLTR NBLTR SBLTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0)	95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1)
WBLTR NBLTR SBLTR 10	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Rc Future Tot With Kerr St. 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues	95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) tt Improvements 95th Percentile Queues	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues	mprovements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues	95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues
WBLTR NBLTR SBLTR 10	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft RC Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) stl (Phase 2) Closure 95th Percentile Queues 40.0 (82.7)
WBLTR NBLTR SBLTR 10	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Rc Future Tot With Kerr St. 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues	95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) tt Improvements 95th Percentile Queues	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues	mprovements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues	95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future To Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) at (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Rc Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0)	mprovements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future To Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) at (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft RC Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and all (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro Future Tot With Kerr St. 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 92.9 (135.2)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and all (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (148.4)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) Il (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR SBL SBTR	50th Percentile Queues 9 6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Rc Future Tot With Kerr St. 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 92.9 (135.2) 18.8 (12.6) 101.1 (91.3)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) st Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tote Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 11.3 (148.4) 13.8 (6.5)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) Il (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBT WBR NBL NBTR SBL	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft RC Future Tot. With Kerr St 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 92.9 (135.2) 18.8 (12.6) 101.1 (91.3) Kerr Street & Rail Track	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) st Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (148.4) 13.8 (6.5) 115.7 (109.8)	Olosure 95th Percentille Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentille Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR SBL SBTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro Future Tot With Kerr St. 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (39.9) 8.2 (8.2) 92.9 (135.2) 18.6 (12.6) 101.1 (91.3) Kerr Street & Rail Track Future Tot With Kerr St.	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future To Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (148.4) 13.8 (6.5) 115.7 (109.8)	Closure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) at (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2) 152.7 (151.5)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBT NBTR SBL SBTR 14	50th Percentile Queues 9, 6 (8.5) 8,7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro Future Tot With Kerr St. 50th Percentile Queues 27,0 (51.2) 11.5 (30.1) 3,7 (11.0) 17.1 (21.9) 0,0 (89.9) 8,2 (8.2) 92.9 (135.2) 18.8 (12.6) 101.1 (91.3) Kerr Street & Rail Track Future Tot With Kerr St. 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) ad al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) al (Phase 1) Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future To Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3) Future To Without Kerr S 50th Percentile Queues	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) al (Phase 1) 8t Improvements 95th Percentile Queues	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	mprovements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) Improvements 95th Percentile Queues	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) t Improvements 95th Percentile Queues	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (148.4) 13.8 (6.5) 115.7 (109.8)	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2) 152.7 (151.5) al (Phase 2) Closure 95th Percentile Queues
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR SBL SBTR	50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft Ro Future Tot With Kerr St. 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (39.9) 8.2 (8.2) 92.9 (135.2) 18.6 (12.6) 101.1 (91.3) Kerr Street & Rail Track Future Tot With Kerr St.	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and al (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future To Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5)	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (148.4) 13.8 (6.5) 115.7 (109.8)	Closure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) at (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2) 152.7 (151.5)
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR SBL SBTR 14	96 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft RC Future Tot With Kerr St: 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 92.9 (135.2) 18.8 (12.6) 101.1 (91.3) Kerr Street & Rail Track Future Tot With Kerr St: 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and all (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) all (Phase 1) Improvements 95th Percentile Queues 73.3 (107.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3) Future Tol Without Kerr S 50th Percentile Queues 57.3 (85.4)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) al (Phase 1) 8t Improvements 95th Percentile Queues 73.3 (107.7)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5) Future Tot With Kerr St 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) Improvements 95th Percentile Queues 77.5 (111.6)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5) Future Tot Without Kerr S 50th Percentile Queues	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) t Improvements 95th Percentile Queues 77.5 (111.6)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (14.4) 13.8 (6.5) 115.7 (109.8) Future Tota Kerr St 50th Percentile Queues	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2) 152.7 (151.5) al (Phase 2) Closure 95th Percentile Queues ()
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR SBL SBTR 14	96 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft RC Future Tot With Kerr St: 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 92.9 (135.2) 18.8 (12.6) 101.1 (91.3) Kerr Street & Rail Track Future Tot With Kerr St: 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and all (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) all (Phase 1) Improvements 95th Percentile Queues 73.3 (107.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3) Future Tol Without Kerr S 50th Percentile Queues 57.3 (85.4)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) al (Phase 1) 8t Improvements 95th Percentile Queues 73.3 (107.7)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5) Future Tot With Kerr St 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) Improvements 95th Percentile Queues 77.5 (111.6)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5) Future Tot Without Kerr S 50th Percentile Queues	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) t Improvements 95th Percentile Queues 77.5 (111.6)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (14.4) 13.8 (6.5) 115.7 (109.8) Future Tota Kerr St 50th Percentile Queues	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2) 152.7 (151.5) al (Phase 2) Closure 95th Percentile Queues ()
WBLTR NBLTR SBLTR 10 EBL EBTR WBL WBT WBR NBL NBTR SBL SBTR 14	96 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Dorval Road & Wyecroft RC Future Tot With Kerr St: 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 92.9 (135.2) 18.8 (12.6) 101.1 (91.3) Kerr Street & Rail Track Future Tot With Kerr St: 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) and all (Phase 1) Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) all (Phase 1) Improvements 95th Percentile Queues 73.3 (107.7)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (18.6) 18.0 (32.3) Future Tol Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.5 (30.1) 3.7 (11.0) 17.1 (21.9) 0.0 (89.9) 8.2 (8.2) 90.6 (135.2) 18.8 (12.6) 101.1 (91.3) Future Tol Without Kerr S 50th Percentile Queues 57.3 (85.4)	8t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (55.3) 47.8 (98.2) al (Phase 1) 8t Improvements 95th Percentile Queues 40.0 (82.7) 24.1 (45.1) 9.1 (19.8) 31.3 (36.6) 0.0 (127.6) 13.1 (11.4) 128.5 (160.4) 28.7 (21.8) 140.3 (126.8) al (Phase 1) 8t Improvements 95th Percentile Queues 73.3 (107.7)	With Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot With Kerr St 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5) Future Tot With Kerr St 50th Percentile Queues	Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) Improvements 95th Percentile Queues 77.5 (111.6)	Without Kerr S 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 24.6 (19.2) 18.8 (33.6) Future Tot Without Kerr S 50th Percentile Queues 27.0 (51.2) 11.9 (30.0) 3.6 (10.9) 18.3 (23.0) 0.0 (91.0) 8.6 (7.9) 97.6 (136.7) 18.8 (13.8) 105.3 (96.5) Future Tot Without Kerr S 50th Percentile Queues	t Improvements 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 61.6 (56.9) 49.6 (102.4) al (Phase 2) t Improvements 95th Percentile Queues 40.0 (82.7) 24.5 (45.1) 9.0 (19.8) 32.5 (38.3) 0.0 (129.7) 12.9 (11.2) 142.9 (162.4) 28.7 (23.2) 146.5 (132.7) al (Phase 2) t Improvements 95th Percentile Queues 77.5 (111.6)	Kerr St 50th Percentile Queues 9.6 (8.5) 8.7 (3.4) 21.9 (16.0) 13.6 (25.7) Future Tota Kerr St 50th Percentile Queues 27.0 (51.2) 7.2 (18.6) 3.8 (12.4) 8.3 (13.5) 0.0 (73.7) 11.8 (7.2) 111.3 (14.4) 13.8 (6.5) 115.7 (109.8) Future Tota Kerr St 50th Percentile Queues	Olosure 95th Percentile Queues 15.4 (16.5) 16.8 (13.0) 55.5 (48.1) 37.3 (78.1) al (Phase 2) Closure 95th Percentile Queues 40.0 (82.7) 18.8 (32.8) 9.8 (22.0) 18.9 (25.5) 0.0 (98.0) 12.9 (9.6) 124.2 (184.3) 22.7 (12.2) 152.7 (151.5) al (Phase 2) Closure 95th Percentile Queues ()

APPENDIX J: Capacity Analyses Worksheets – Synchro Analyses

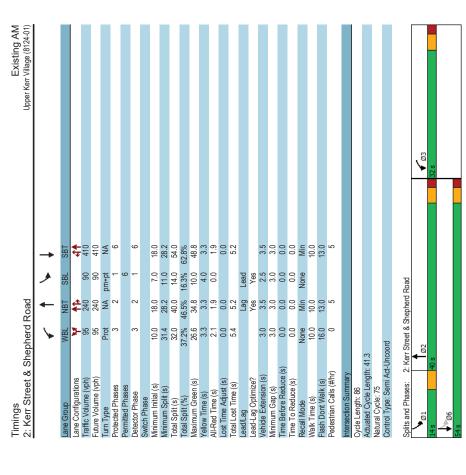
HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

Existing AM Upper Kerr Village (8124-01)

Movement EBI EBR NBI NBT SBR Traffic Volume (Vehir) 5 80 160 300 475 125 Texture Vulume (Vehir) 5 80 160 300 475 125 Sign Control 0% 0% 0% 0% 0% 0% Grade 0% 0.94 0.94 0.94 0.94 0.94 0.94 Hourly flow nete (vph) 5 85 170 319 506 133 Lea et Micht (m) 1 85 170 319 506 133 Lea et Micht (m) 1 85 170 319 506 133 Lea et Micht (m) 1 85 170 319 506 133 Right Lam flare (veh) 1 82 8 4 4 4 Median type 1 82 4 4 4 4 4 4 4 4 4 4 4 <th></th> <th>4</th> <th>></th> <th>•</th> <th>←</th> <th>→</th> <th>*</th>		4	>	•	←	→	*
None	Movement	盟	EBR	NBL	NBT	SBT	SBR
h) 5 80 160 300 475 125 h) 5 80 160 300 475 125 0.94 0.94 0.94 0.94 0.94 0 6 85 170 319 505 133 e 1230 572 638 e 1230 572 638 f 4 62 4.1 1230 572 638 f 82 82 162 84 82 162 84 82 170 0 0 0 85 170 0 0 0 86 170 0 170 87 24 0 0 0 88 14.7 3.4 0.0	ane Configurations	>		r	*	2	
Stop Stop Free Free Free Free Free Free Free Fre	Traffic Volume (veh/h)	2	8	160	300	475	125
Stop 6% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Future Volume (Veh/h)	2	8	160	300	475	125
0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 %	Sign Control	Stop			Free	Free	
0.94 0.94 0.94 0.94 0.94 0.99 5 85 170 319 505 133 6 1230 572 638 6.4 6.2 4.1 162 518 946 EB1 NB1 NB2 SB1 90 1 133 5 170 0 0 85 0 0 133 462 9.00 0.00 85 0 0 0.00 85 170 0 0.00 85 0 0 0.00 86 0 0 0.00 87 84 82 98 10 0 0 0 87 84 82 90 0 0 0 0 88 0 0 0 0 0 89 0 0 0 0 0 80 0 0 0 0 0 0 0 80 0 0 0 0 0 0 0 0 80 0 0 0 0 0 0 0 0 0 80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Grade	%0			%0	%0	
5 85 170 319 505 133	Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
e 1230 572 638 e 1230 572 638 f 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 170 319 638 5 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.19 0.38 m) 5.4 5.0 0.0 0.0 14.7 9.6 0.0 0.0 B A 14.7 3.4 0.0 B A 14.7 3.4 0.0	Hourly flow rate (vph)	2	82	170	319	505	133
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e 1230 572 638 e 1230 572 638 f 6.4 6.2 4.1 1230 572 638 f 6.4 6.2 4.1 6.4 6.2 4.1 6.4 6.2 4.1 6.5 18 946 EB1 NB1 NB2 SB1 90 0 133 65 170 0 0 85 0 0 133 65 0 0 0.0 0.19 0.18 0.19 0.38 m) 5.4 50 0.0 0.0 B A 0.0 B A 0.0 14.7 3.4 0.0 B A 14.7 3.4 0.0	Lane Width (m)						
Hone None None 1230 572 638 e 1230 572 638 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 6.0 0 0 130 6.19 0.19 0.8 6.0 0 0.0 0.19 0.19 0.0 0.19 0.19 0.0 0.19 0.0 0.0 14.7 9.6 0.0 0.0 B	alking Speed (m/s)						
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Hone None 1230 572 638 1230 572 638 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 1 133 65 170 0 0 85 170 0 0 147 96 0.0 0.0 B A 0.0 B A 0.0 1547 3.4 0.0 B A 100 ICU Level of Service 1567% ICU Level of Service	Right turn flare (veh)						
e 1230 572 638 e 6.4 6.2 4.1 1230 572 638 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.18 0.19 0.38 m) 5.4 50 0.0 0.0 B A 0.0 0.0 B A 0.0 1.0 B A 14.7 96 0.0 0.0 B A 14.7 3.4 0.0 B A 14.7 3.4 0.0	Median type				None	None	
1230 572 638	dian storage veh)						
e 1230 572 638 1230 572 638 6.4 6.2 4.1 6.4 6.2 4.1 6.4 6.2 4.1 102 572 638 6.4 6.2 4.1 102 6.4 6.2 102 6.8 82 102 88 103 10 319 638 104 10 0.8 10 0.8 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 101 0.18 0.19 0.38 102 0.10 0.10 0.10 103 103 103 103 103 103 103 103 103 103	stream signal (m)						
e 1230 572 638 1 1230 572 638 6.4 6.2 4.1 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 170 0 0 85 170 0 0 85 0 0 173 462 946 170 170 0.19 0.18 0.19 0.38 m) 5.4 5.0 0.0 0.0 B A 0.0 B A 0.0 14.7 3.4 0.0 15.4 3.4 0.0 15.4 2.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1	, platoon unblocked						
1230 572 638 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 85 0 0 133 462 946 1700 1700 0.19 0.19 0.13 0.147 9.6 0.0 0.0 14,7 9.6 0.0 0.0 B A 14,7 3.4 0.0 B A 14,7 3.4 0.0 B A 14,7 3.4 0.0 B A 15,7	, conflicting volume	1230	572	638			
1230 572 638 6.4 6.2 4.1 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 90 170 319 638 90 170 170 100 85 170 0 0 85 170 0 0 85 170 0 0 85 170 0 0 85 170 0 0 85 170 0 0 85 170 0 0 87 123 0 88 123 0 89 170 1700 90 133 0 80 0 0 0 80 0 0 0 80 0 0 0 80 0 0 0 0	1, stage 1 conf vol						
1230 572 638 6.4 6.2 4.1 3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 170 319 638 5 170 0 0 85 0 0 133 462 90 0.8 0.13 0.19 0.18 0.19 0.38 0.1 0.0 0.0 B A O O O O O O O O O O O O O O O O O O	2, stage 2 conf vol						
6.4 6.2 4.1 3.5 3.3 2.2 9.7 84 82 16.2 5.18 946 EB1 NB1 NB2 SB1 90 170 0 0 8.5 0 0 133 46.2 94.6 1700 1700 0.19 0.18 0.19 0.38 m) 5.4 5.0 0.0 0.0 B A 0.0 0.0 B A 0.0 1.0 14.7 96 0.0 0.0 B A 0.0 1.0 15.4 3.4 0.0 1.0 15.5 3.4 0.0 1.0 16.5 3.4 0.0 1.0 17.5 3.4 0.0 1.0 18.5 3.4 0.0 1.0 18.5 3.4 0.0 1.0 19.5 3.4 0.0 1.0 19.5 3.4 0.0 1.0 10.5 3.4 0.0 1.0	u, unblocked vol	1230	572	638			
3.5 3.3 2.2 97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 170 319 638 5 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.18 0.19 0.38 M) 5.4 5.0 0.0 0.0 B A 0.0 0.0 B A 0.0 0.0 B A 0.0 0.0 B A 0.0 0.0 Cubication 56.7% ICU Level of Service	single (s)	6.4	6.2	4.1			
35 33 22 162 18 946 EB1 NB1 NB2 SB1 90 170 319 638 5 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.18 0.19 0.38 m) 54 5.0 0.0 0.0 14.7 9.6 0.0 0.0 B A 0.0 14.7 3.4 0.0 B A 10.0 14.7 3.4 0.0	2 stage (s)						
97 84 82 162 518 946 EB1 NB1 NB2 SB1 90 170 0 0 85 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.18 0.19 0.38 m) 5.4 5.0 0.0 0.0 14.7 96 0.0 0.0 B A 0.0 9 24 10.1 Evel of Service	(s)	3.5	3.3	2.2			
162 518 946	dnene tree %	26	8	85			
EB1 NB1 NB2 SB1 90 170 319 638 5 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.18 0.19 0.38 m) 5.4 5.0 0.0 0.0 14.7 9.6 0.0 0.0 B A A 0.0 14.7 3.4 0.0 Y 2.4 ICU Level of Service 15 7.7	capacity (veh/h)	162	218	946			
90 170 319 638 5 170 0 0 85 0 0 133 462 946 1700 1700 0.19 0.18 0.19 0.38 m) 5,4 5,0 0,0 0,0 B A 0,0 0,0 B A 0,0 14.7 3.4 0.0 B A 0.0 2,4 0.0 14.7 3.4 0.0	ection, Lane #	EB 1	NB 1	NB 2	SB 1		
85 170 0 0 85 0 0 133 462 94 1700 1700 0.19 0.18 0.19 0.38 m) 54 50 0.0 0.0 14.7 96 0.0 0.0 B A 0.0 9 24 0.0 14.7 3.4 0.0 14.7 3.4 0.0 15.7 ICU Level of Service	lume Total	06	170	319	638		
85 0 0133 462 946 1700 1700 0.19 0.18 0.19 0.38 m) 5.4 5.0 0.0 0.0 14.7 96 0.0 0.0 B A 0.0	lume Left	2	170	0	0		
M) 5.4 1700 1700 M) 5.4 5.0 0.0 0.0 M 14.7 3.4 0.0 M 24 0.0 M 25 0.0 M 26 0.0 M 26 0.0 M 27 0.0 M	lume Right	82	0	0	133		
m) 6.19 0.18 0.19 0.38 5.4 5.0 0.0 0.0 B A A 0.0 B B A 14.7 3.4 0.0 B	I	462	946	1700	1700		
m) 54 50 00 00 14.7 96 0.0 0.0 B A 0.0 14.7 3.4 0.0 B 2.4 ICU Level of Service	lume to Capacity	0.19	0.18	0.19	0.38		
14.7 9.6 0.0 0.0 B A 0.0 14.7 3.4 0.0 B 2.4 Utilization 56.7% ICU Level of Service	eue Length 95th (m)	5.4	2.0	0.0	0.0		
B A 14.7 3.4 0.0 B 2.4 Utilization 56.7% ICU Level of Service	ntrol Delay (s)	14.7	9.6	0.0	0.0		
14.7 3.4 0.0 B 2.4 CUtilization 56.7% ICU Level of Service	ne LOS	ш	∢				
y 2.4 CU Level of Service 15.7% CU Level of	proach Delay (s)	14.7	3.4		0.0		
7 2.4 CU Level of Service 56.7% ICU Level of Service 15.20 15.00 1	proach LOS	Ω					
2.4 Utilization 56.7% ICU Level of Service 15	ersection Summary						
Utilization 56.7% ICU Level of Service 15	erage Delay			2.4			
15	ersection Capacity Utilization			26.7%	2	J Level of	
	alysis Period (min)			15			

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

Synchro 11 Report Page 1



P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

Existing AM Quenes

2. Kerr Street & Shepherd Boad	epherd	Road		Upper Kerr Village (8124-01)
10.00.00	5	500		
	-	←	→	
Lane Group	. WBL	NBT	L88	
Lane Group Flow (vph)	335	324	550	
v/c Ratio	09:0	0.21	0.41	
Control Delay	12.9	9.9	6.8	
Queue Delay	0.0	0.0	0.0	
Total Delay	12.9	9.9	8.9	
Queue Length 50th (m)	10.9	5.1	11.1	
Queue Length 95th (m)	31.7	13.1	25.3	
Internal Link Dist (m)	241.3	143.2	2.5	
Turn Bay Length (m)				
Base Capacity (vph)	1111	2864	2898	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reducth	0	0	0	
Reduced v/c Ratio	0.30	0.11	0.19	
0				

Synchro 11 Report Page 3 P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Existing AM Upper Kerr Village (8124-01)

			NRT	NRP	a S		
Movement	WBL	WBR	2	יומין	100	SBT	
Lane Configurations	>-		₩			4₩	
Traffic Volume (vph)	92	210	240	22	90	410	
Future Volume (vph)	8	210	240	22	06	410	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
lotal Lost time (s)	4.0		2.5			5.2	
Lane Util. Factor	9.6		0.95			0.95	
Fipb, ped/bikes	0.33		00.1			100	
FIT	0.91		0.97			1.00	
Fit Protected	0.98		1.00			66:0	
Satd. Flow (prot)	1639		3366			3484	
Flt Permitted	0.98		1.00			0.83	
Satd. Flow (perm)	1639		3366			2914	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	\$	231	264	09	66	451	
RTOR Reduction (vph)	26	0	20	0	0	0	
Lane Group Flow (vph)	238	0	304	0	0	550	
Confl. Peds. (#/hr)	വ	2		2	2		
Heavy Vehicles (%)	%8	%0	2%	2%	1%	3%	
Bus Blockages (#/hr)	0	0	9	0	0	0	
Turn Type	Prot		NA		pm+pt	NA	
Protected Phases	က		2		_	9	
Permitted Phases					9		
Actuated Green, G (s)	11.6		19.0			19.0	
Effective Green, g (s)	11.6		19.0			19.0	
Actuated g/C Ratio	0.28		0.46			0.46	
Clearance Time (s)	5.4		5.2			5.2	
Vehide Extension (s)	3.0		3.5			3.5	
Lane Grp Cap (vph)	461		1552			1343	
v/s Ratio Prot	c0.15		0.09				
v/s Ratio Perm						61.00	
v/c Ratio	0.52		0.20			0.41	
Unitorm Delay, d1	12.4		9.9			4.7	
Progression Factor	1.00		1.00			1.00	
Incremental Delay, d2	1.0		0.1			0.2	
Delay (s)	13.4		9.9			9.7	
Level of Service	В		∢			∢	
Approach Delay (s)	13.4		9.9			9.2	
Approach LOS	В		¥			¥	
Intersection Summary							
HCM 2000 Control Delay			0 6	Ĭ	M 2000	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	acity ratio		0.52				
Actuated Cycle Length (s)			41.2	S	Sum of lost time (s)	time (s)	14.6
Intersection Capacity Utilization	ation		62.8%	⊇	ICU Level of Service	Service	ш
Analysis Period (min)			15				
c Critical Lane Group							

P.181/24(01/OPA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

Existing AM Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

→	SBT	2	135	135	NA	œ		∞		10.0	34.3	53.0	44.2%	46.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	35						
۶	SBL	r	345	345	pm+pt	က	∞	က		7.0	10.0	24.0	20.0%	21.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None									
•	NBR	¥C.	365	365	Perm		4	4		10.0	34.3	40.0	33.3%	33.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	32						
←	NBT	*	92	92	ΑA	4		4		10.0	34.3	40.0	33.3%	33.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	32						
•	NBL	r	92	92	pm+pt	7	4	7		7.0	10.0	11.0	9.5%	8.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None									
4	WBR	¥.	175	175	Perm		2	2		25.0	30.9	45.0	37.5%	39.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	12				of Green		
ţ	WBT	‡	435	435	ΑN	2		2		25.0	30.9	45.0	37.5%	39.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15				TL, Start		
-	WBL	*	180	180	pm+pt	2	2	2		7.0	10.0	14.0	11.7%	11.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None							and 6:EB		
†	EBT	₩	605	909	Υ	9		9		25.0	30.9	42.0	35.0%	36.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	12				2:WBTL		
4	EBL	*	32	32	pm+pt	-	9	-		7.0	10.0	11.0	9.5%	8.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None							to phase		dinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset 43 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated

40 √ 07 V €05 + €06(R)

P.1811240110PA Process\(\text{3.}\) Analysis\(\text{01}\) - Synchro\(\text{EXAM}\) syn BA Group - EFS

Queues 3: Kerr Street & Speers Road

Existing AM Upper Kerr Village (8124-01)

	\	Ť	-	,	/		_	L	•	+	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	41	802	209	909	203	110	110	424	401	238	
v/c Ratio	0.09	0.65	0.64	0.34	0.27	0.31	0.30	0.89	0.71	0.43	
Control Delay	16.4	30.0	28.7	26.1	4.8	22.8	40.8	39.9	32.3	30.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	
Total Delay	16.4	30.0	28.7	26.1	4.8	22.8	40.8	39.9	35.3	30.5	
Queue Length 50th (m)	3.0	90.2	26.4	43.0	0.0	15.3	22.0	43.5	68.1	39.3	
Queue Length 95th (m)	m7.9	m114.8	#49.2	61.7	13.7	21.8	32.8	70.1	79.0	51.8	
Internal Link Dist (m)		211.8		474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0		100.0	20.0		45.0			
Base Capacity (vph)	466	1227	328	1484	260	353	217	277	999	889	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	82	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.09	0.65	0.64	0.34	0.27	0.31	0.21	0.73	0.83	0.35	
Intersection Summary											
# 95th percentile volume exceeds capacity, queue may be longer	xceeds cal	pacity, du	eue may	oe longer							

m Volume for 95th percentile queue is metered by upstream signal.

P\\81\24\01\0PA Process\\3. Analysis\\01 - Synchro\EXAM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Existing AM Upper Kerr Village (8124-01)

Per	435 435 435 435 1900 5.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	MBR NBL 175 95 1175 95 1175 95 1175 95 1170 100 0.96 1.00 0.96 1.00 0.96 1.00 0.96 0.96 0.86 0.86 0.86 0.86 0.86 0.86 110 0.86 0.86 0.86	NBT 100 100 100 100 100 100 100 10	NBR 365 365 365 365 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	SBL 345 345 345 300 100 100 100 107 107 107 107 107 107 1		70 70 1900
No.	1900 5.9 1000 1.00 1.00 1.00 1.00 34.38 0.86 5.06 0.08 5.06 0.08 5.06 5.06 5.06 5.06 5.06 5.06 5.06 5.06	£ 440405050		365 365 365 365 1900 6.3 1.00 0.85 1.00 1.429 1.00 1.429 1.00 1.00 1.00 1.00 1.00 1.00 1.00 3.3 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5			70 7000
35 605 85 180 1900 1900 1900 1900 1900 1900 1900 190	435 1900 5.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 5.06 5.06 5.06 5.06 5.06 5.06 5.00 5.00	£ 440495959		365 365 1900 6.3 1.00 0.93 1.00 1.00 1.429 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0			0000
35 605 85 180 190 1900 1900 1900 1900 1900 1900 1900	1935 1900 5.9 1.00 1.00 1.00 1.00 34.38 1.00 5.06 5.06 5.06 5.06 5.00 5.00 5.00 5	£ 449495959		365 1900 6.3 1.00 0.93 1.00 1.429 1.00 1.429 1.4			0061
1900 1900 1900 1900 1900 1900 1900 1900	1900 1,00	£ 440495950		6.3 1.00 0.93 1.00 0.85 1.00 1.429 1			0061
3.0 5.9 3.0 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.98 1.00 1.00 0.98 1.00 1.00 0.95	5.9 0.95 1.00 1.00 1.00 1.00 34.38 0.88 5.06 5.06 5.06 0.08 5.06 0.08 5.06 0.00 0.00 0.00 0.00 0.00 0.00 0.00	F		6.3 1.00 0.93 1.00 0.85 1.00 1.429 1.00 1.429 4.24 4.24 4.24 1.07 2.27 2.27 3.5 5%			80
1.00 0.35 1.00 0.99 1.00 0	0.95 1.00 1.00 1.00 1.00 34.38 0.08 5.06 5.06 5.06 5.06 5.06 5.06 5.06 5.06			1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			30
1.00 0.39 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	- 0 + 0 = 0 = 0 + 1 Fe		0.93 1.00 1.00 1.00 1.429 1.429 0.86 4.24 1.97 2.27 3.5 5%			80
0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 34.38 34.38 5.06 5.06 5.06 5.06 5.06 5.06 5.06	9		0.85 0.85 1.00 1.00 1.00 1.00 0.86 424 424 197 227 35 5%			80
1.00 0.98 1.00 0.96 1.00 0.95 1.00 0	1.00 1.00 3438 3438 1.00 3438 0.86 5.06 5.06 5.06	40 50 50 1 E		0.85 1.00 1.00 1.00 1.00 1.00 4.24 1.97 2.27 3.5 5%			90 0
10.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.20 0.20 0.20 0.20 0.20 0.20 0.20	1.00 3438 3438 3438 0.86 506 506 506 506 506	0 5 0 5 0		1.00 1429 1.00 1.00 0.86 424 197 227 35 5%			90 0
1795 3222 1686 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	3438 3438 3438 506 506 506 506 507 700 700 700 700 700 700 700 700 700	5050		1429 1.00 1429 0.86 424 197 227 35 5%			90 0
947 1.00 0.29 946 289 289 269 95 289 289 289 95 289 289 289 96 1 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	1.00 3438 0.86 506 0 506 506 0 0 0 0 0 0 0 0 0 0 0 0	0 5 0		1.00 1429 0.86 424 197 227 35 5% 0			30 0
HE 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86	3438 0.86 5.06 5.06 5.06 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	E O	`	1429 0.86 424 197 227 35 5% 0			30 0
HF 0.86 0.86 0.86 0.89 (0.86 506 506 508 0 0 0 0			0.86 424 197 227 35 5% 0			200
ph) 41 703 99 209 ph) 41 704 0 209 ph) 41 794 0 209 0% 6% 7% 7% 7% 0% 6% 7% 7% 7% 1 0 4 0 0 0 0 4 0 0 0 0 0 4 0 0 0 0 0 0 0	506 0 5% 0 0 NA	g a		424 197 227 35 5% 0			0.00
ph) 41 794 0 209 15 10 10 10 0% 6% 7% 7% 0% 6% 7% 7% 1 6 6% 0 0 1 6 60 0 5) 50.2 444 60.0 5) 50.2 444 60.0 0.42 0.37 0.50 3.0 5.9 3.0 3.0 5.9 3.0 3.0 5.9 3.0 412 1218 316 -0.07 0.00 0.24 0.007 0.00 0.24 0.007 0.10 0.65 0.66 0.10 0.65 0.66	5% 5% NA	a a		197 227 35 5% 0	•		8
ph) 41 794 0 209 15 6% 7% 7% 7% 0 4 0 0 0 4 0 0 0 4 0 0 0 4 0 0 0 20 0 10 0 0 10 0 0 10 0 0 10 0	506 5% NA	nq		227 35 5% 0	0	17	0
15 10 10 10 10 10 10 10 10 10 10 10 10 10	5% NA	mq	÷. 2	35 5% 0	401	221	0
) 0% 6% 7% 7% 7% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	2% NA	μď	÷ 2	2%	32		20
(s) pm+pt NA pm+pt 5.0.2 44.4 60.0 5.0.2 44.4 60.0 5.0.2 44.4 60.0 5.0.2 44.4 60.0 5.0.2 44.4 60.0 5.0.2 6.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5	O A c		2	0	2%	3%	2%
(s) 50.2 44.4 60.0 2 60.0 60.0 60.0 60.0 60.0 60.0 60	NA				0	0	0
(s) 50.2 44.4 60.0 5) 50.2 44.4 60.0 3.0 50.2 44.4 60.0 0.42 0.37 0.50 3.0 5.9 3.0 2.5 5.5 2.5 1.412 1218 316 0.00 0.00 0.24 0.07 0.00 0.24 0.07 0.00 0.84 19.7 0.10 0.85 0.86 0.10 0.85 0.86	0			Perm	pm+pt	N A	
(s) 50.2 44.4 60.0 s) 50.2 44.4 60.0 0.42 0.37 0.50 3.0 5.9 3.0 3.0 5.9 3.0 3.0 5.9 3.0 4.12 12.18 3.16 7.0 0.00 0.24 0.07 0.05 0.10 0.65 0.06 0.10 0.65 0.06 0.10 0.83 1.4 19.7 0.28 31.4 19.7 0.39 0.84 1.00	1	7	4		က	œ	
(s) 50.2 44.4 60.0 5) 50.2 44.4 60.0 50.2 44.4 60.0 3.0 5.9 3.0 5) 2.5 5.5 2.5 7.5 5.5 2.5 0.04 0.24 0.07 0.04 0.24 0.07 0.04 0.05 0.06 0.10 0.65 0.66 0.10 0.65 0.66 0.10 0.65 0.66 0.10 0.65 0.66 0.10 0.84 19.7 0.10 0.84 1.00				4	œ		
(s) 50.2 44.4 60.0 0.42 0.37 0.50 3.0 5.9 3.0 3.0 2.5 5.5 2.5 0.00 0.24 0.07 0.00 0.24 0.07 0.00 0.65 0.06 2.08 31.4 19.7 0.29 0.84 1.00 0.29 0.84 24.3		51.2 31.4	23.5	23.5	47.8	36.9	
9) 2.0 5.9 3.0 5.9 3.0 5.9 3.0 5.9 3.0 5.9 3.0 5.9 5.5 5.5 5.0 5.0 0.00 0.24 0.07 0.06 0.06 0.07 0.08 31.4 19.7 0.09 0.09 0.09 0.09 0.09 0.09 0.09 0				23.5		36.9	
s) 59 30 125 55 25 0 00 024 0007 0.04 0.05 0.06 0.10 0.65 0.66 208 314 197 0.31 0.84 1.00 d2 0.1 22 4.6	C	0.43 0.26	J	0.20		0.31	
(s) 2.5 5.5 2.5 1) 412 1218 316 70 0.00 0.24 0.07 0.04 0.06 0.06 2.08 31.4 19.7 1.00 0.91 0.84 1.00 1.00 28.4 24.3				6.3	3.0	6.3	
1) 412 1218 316 0,000 0,24 c0,007 0,000 0,24 c0,008 0,100 0,65 0,066 2,08 314 197 r 0,91 0,84 1,00 r 0,1 22 4,6	5.5	5.5 2.5		4.0	2.5	4.0	
0.04 c.007 0.04 c.026 0.10 0.66 0.626 2.08 31.4 19.7 r 0.91 0.84 1.00 100 284 24.3	1466	637 321	361	279	532	531	
0.04 c0.28 c0.28 c0.28 c0.40 0.65 c0.66 c0	0.15		90:0		c0.13	0.13	
0.10 0.66 0.66 20.8 31.4 19.7 r 0.91 0.84 1.00 d2 0.1 2.2 4.6 19.0 28.4 24.3				0.16	c0.17		
r 20.8 31.4 19.7 r 0.91 0.84 1.00 ,d2 0.1 2.2 4.6 19.0 28.4 24.3		0.14 0.34		0.81	0.75	0.42	
0.91 0.84 1.00 0.1 2.2 4.6 19.0 28.4 24.3	23.1			46.2	28.8	33.0	
0.1 2.2 4.6 19.0 28.4 24.3		1.00 1.00	•	1.00	1.00	1.00	
19.0 28.4 24.3 23				17.2	2.7	0.7	
	23.8	21.4 35.5	41.9	63.3	34.5	33.7	
O O	ပ	۵ د	_	ш	ပ	ပ	
y (s) 28.0	23.4		54.9			34.2	
Approach LOS C	ပ					ပ	
Intersection Summary							
33.6	HCM 2000 Le	HCM 2000 Level of Service		O			
HCM 2000 Volume to Capacity ratio 0.74							
120.0	Sum of lost time (s)	me (s)		18.2			
Utilization 81.4%	ICU Level of Service	Service		_			
Analysis Period (min)							

P./81/2401/OPA Processi3. Analysis01 - SynchrolEXAM syn BA Group - EFS

Synchro 11 Report Page 7

Timings
4: Dorval Road & Speers Road
4: Dorval Road & Speers Road

	1	†	-	ţ	1	•	+	۶	→	•	
Lane Group	B	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
disco of the contract of the c	1	4	•	4	•	4	4	4	3	*	
Lane Comigurations	<u>ב</u> ;	<u>*</u>	- ;	- 8	_ 6	- 6	<u>*</u>	- 3	- 5	<u>.</u> .	
Iramc volume (vpn)	410	482	0	300	081	2 1	07/	740	420	722	
Future Volume (vph)	415	482	75	300	180	2	720	240	420	255	
Turn Type	Prot	¥ Y	bm+pt	NA	Perm	pm+pt	≨	pm+pt	N N	Perm	
Protected Phases	7	4	က	∞		2	2	_	9		
Permitted Phases			∞		∞	2		9		9	
Detector Phase	7	4	က	∞	∞	2	2	_	9	9	
Switch Phase											
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	11.0	45.0	45.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	24.0	49.0	17.0	45.0	45.0	11.0	41.0	13.0	43.0	43.0	
Total Split (%)	20.0%	40.8%	14.2%	35.0%	35.0%	9.5%	34.2%	10.8%	35.8%	35.8%	
Maximum Green (s)	20.0	45.0	13.0	35.0	32.0	7.0	34.0	9.0	36.0	36.0	
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	1.0	3.0	3.0	1.0	3.0	1:0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	C-Min	None	O-Min	C-Min	
Walk Time (s)		7.0		7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		28.0		28.0	28.0		26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2		2	2		2		2	2	
Intersection Summary											
Cycle Length: 120											
Actuated Cycle Length: 120											
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB	IL, Start o	of Green						
Natural Cycle: 115											
Control Type: Actuated-Coordinated	rdinated										
Splits and Phases: 4: Dorv	4: Dorval Road & Speers Road	Speers	Road								
Ø1 • Ø2(R)				*	, s	•	4 04				
13s 41s				17 s		49	S				
4 05 (B)				_	700		\$	**************************************			
45				240	i		100	3			

P.18112401/OPA Process\3, Analysis\01 - Synchro\EXAM.syn BA Group - EFS

Queues 4: Dorval Road & Speers Road

Existing AM Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Existing AM Upper Kerr Village (8124-01)

	1	t	4	ţ	4	*	+	٠	→	*	
			•			-	-		-		
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Group Flow (vph)	451	570	82	326	196	9/	924	261	489	277	
v/c Ratio	0.84	09:0	0.29	0.54	0.49	0.20	0.93	0.68	0.32	0.36	
Control Delay	63.2	39.2	19.6	37.5	11.7	18.8	57.3	33.4	8.6	2.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	63.2	39.2	19.6	37.5	11.7	18.8	57.3	33.4	8.6	2.8	
Queue Length 50th (m)	53.1	62.8	6.3	39.4	21.3	8.2	109.8	15.7	22.8	0.9	
Queue Length 95th (m)	#74.4	69.2	9.0	49.8	31.7	20.5	#148.4	#114.5	39.5	17.6	
Internal Link Dist (m)		412.3		472.1			621.6		494.4		
Turn Bay Length (m)	0.09		85.0		92.0	0.07		110.0			
Base Capacity (vph)	266	1166	339	949	544	386	994	382	1516	765	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.80	0.49	0.24	0.34	0.36	0.20	0.93	0.68	0.32	0.36	
C											

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

EBL EBT EBR WBL WBT WBR NBL		1	1	1	-	ţ	1	•	—	•	۶	→	*
150 150	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
415 485 40 75 300 180 70 416 485 40 75 300 180 70 420 1900 1900 1900 1900 1900 1900 430 7.0 4.0 7.0 7.0 4.0 430 1.00 1.00 1.00 1.00 1.00 430 1.00 1.00 1.00 1.00 1.00 430 1.00 1.00 1.00 1.00 1.00 430 1.00 1.00 1.00 1.00 1.00 441 627 43 82 326 1484 890 3.3 451 627 43 82 326 1484 890 3.3 451 627 43 82 326 1484 890 3.3 451 627 43 82 326 1484 890 3.3 451 627 43 82 326 1484 890 3.3 451 627 43 82 326 1484 890 3.3 451 627 43 82 326 196 76 6 451 627 43 82 326 196 76 6 451 627 43 82 326 196 76 6 451 342 30.7 22.9 22.9 394 3.3 40 70 342 30.7 22.9 22.9 394 3.3 41 70 342 30.7 22.9 22.9 394 3.3 42 37 22.9 22.9 334 3.3 43 37 22.9 6.5 0.05 0.06 44 34 37 4.12 2.83 4.10 45 47 37 4.12 2.83 4.10 46 47 34 32 32.0 6.5 0.05 47 34 37 4.12 2.83 4.10 48 37 0.06 0.08 0.79 0.79 0.01 48 37 0.08 0.79 0.79 0.01 48 37 0.08 0.70 0.70 0.00 48 37 0.08 0.70 0.70 0.00 48 37 0.08 0.70 0.70 0.00 48 37 0.08 0.70 0.70 0.00 48 37 0.08 0.70 0.70 0.00 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.08 0.70 0.70 0.70 50 0.70 0.70 0.70 0.70 50 0.70 0.70 0.70 0.70 50 0.70 0.70 0.70 0.70 50 0.70 0.70 0.70 0.70 50 0.70 0.70 0.70 50 0.70 0.70 0.70 0.70 50 0.70 0.70	Lane Configurations	K.	₩		<i>y</i> -	‡	*	*	₩.		<u>, , , , , , , , , , , , , , , , , , , </u>	‡	
415 486 40 75 300 180 70 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 1	Traffic Volume (vph)	415	485	40	75	300	180	20	720	130	240	420	255
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	415	482	40	75	300	180	20	720	130	240	420	255
4.0 7.0 4.0 7.0 7.0 4.0 1.00 0.95 1.00 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.97 0.95 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Total Lost time (s)	4.0	7.0		4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0
1.00 1.00 1.00 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	0.97	0.95		1.00	0.95	1.00	1.00	0.95		1.00	0.95	9:
1.00 1.100 1.00 1.00 1.00 1.00 1.00 1.0	Frpb, ped/bikes	1.00	1:00		1.00	1.00	0.98	1.00	1.00		1:00	1.0	0.38
1.00 0.99 1.00 1.00 0.85 1.00 0.95 1.00 0.99 0.09 1.00 1.00 0.09 0.99 0.09 0.0	Flpb, ped/bikes	1:00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1:00	9.
995 1,00 0,95 1,00 0,95 1,00 1,00 0,95 0,95 0,90 0,92 0,92 0,92 0,92 0,92 0,92 0,92	Ŧ	1.00	0.99		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
3400 3289 1656 3256 1444 1785 3256 1449 1785 3256 1400 047 3289 1650 3256 1464 1785 3256 1464 120 047 3250 032 032 032 032 032 032 032 032 032 03	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
905 1.00 0.44 1.00 1.00 0.47 1.00 0.47 1.00 0.289 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	Satd. Flow (prot)	3400	3289		1656	3256	1484	1785	3469		1687	3539	1417
3400 3289 763 3256 1484 890 3. 992 092 092 092 092 092 092 092 092 092	Flt Permitted	0.95	1.00		0.44	1.00	1.00	0.47	1.00		0.11	1.00	9.
192 0.92 0	Satd. Flow (perm)	3400	3289		763	3256	1484	890	3469		191	3539	1417
451 527 43 82 326 196 76 6 6 0 0 0 0 127 0 0 6 6 0 0 0 0 127 0 0 6 6 0 0 0 0 127 0 0 0 127 0 0 0 2 0 0 127 0 0 0 2 0 0 2 0 0 0 127 0 0 0 2 0 0 2 0 0 4 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
10 6 0 0 0 127 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	451	527	43	82	326	196	9/	783	141	261	489	27.
451 564 0 82 326 69 76 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	RTOR Reduction (vph)	0	9	0	0	0	127	0	12	0	0	0	162
5 8% 9% 10% 75 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6 0 <td>Lane Group Flow (vph)</td> <td>451</td> <td>264</td> <td>0</td> <td>82</td> <td>326</td> <td>69</td> <td>9/</td> <td>912</td> <td>0</td> <td>261</td> <td>489</td> <td>115</td>	Lane Group Flow (vph)	451	264	0	82	326	69	9/	912	0	261	489	115
3% 8% 9% 9% 10% 7% 1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Confl. Peds. (#/hr)	2					2	2					
Prof. NA pm-pt NA Perm pm-pt A B B B B B B B B B B B B B B B B B B	Heavy Vehicles (%)	3%	%8	%6	%6	10%	%/	1%	2%	%0	%/	5%	12%
Prot NA pm+pt NA Pem pm+pt 5 8 5 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2 8 8 2 2 9 39.4 3 9.6 5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9.5 9	Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	
7 4 8 8 8 5 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Turn Type	Prot	NA		pm+pt	¥	Perm	pm+pt	¥		pm+pt	NA	Perm
19.1 34.2 30.7 22.9 22.9 39.4 39.1 34.2 30.7 22.9 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 22.9 39.4 30.1 20.1	Protected Phases	7	4		က	00		5	2		_	9	
191 34.2 30.7 22.9 22.9 39.4 30.7 22.9 22.9 39.4 30.7 22.9 22.9 39.4 30.7 22.9 22.9 39.4 30.0 22.9 39.4 30.0 30.2 30.0 30.3 30.2 30.2 30.3 30.2 30.2 30.3 30.2 30.2 30.3 30.2 30.2 30.3 30.2 30.2 30.3 30.2 30.2 30.3 30.2 30.2 30.3 30.3 3	Permitted Phases				∞		∞	2			9		
19.1 34.2 30.7 22.9 22.9 39.4 3 0.16 0.29 0.26 0.19 0.19 0.33 0 3.0 5.0 3.0 5.0 5.0 3.0 541 937 253 621 283 338 0 0.13 0.07 0.05 0.10 0.01 0 0.08 0.08 0.09 0.79 0.79 1.00 1 100 1.00 0.80 0.79 0.79 1.00 1 100 1.00 0.80 0.79 0.79 1.00 1 100 1.00 0.80 0.79 0.79 1.00 1 29.5 38.6 28.8 35.9 33.3 28.6 6 E D C D C C 47.9 2.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Actuated Green, G (s)	19.1	34.2		30.7	22.9	22.9	39.4	33.2		0.09	49.8	49.8
0.16 0.29 0.26 0.19 0.19 0.33 C 4.0 7.0 4.0 7.0 4.0 7.0 4.0 3.0 5.0 5.0 3.0 5.0 5.0 3.0 5.0 5.0 3.0 5.0 5.0 3.0 5.0 5.0 3.0 5.0 5.0 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Effective Green, g (s)	19.1	34.2		30.7	22.9	22.9	39.4	33.2		0.09	49.8	49
4.0 7.0 4.0 7.0 4.0 7.0 4.0 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Ratio	0.16	0.29		0.26	0.19	0.19	0.33	0.28		0.50	0.41	0.41
3.0 5.0 3.0 5.0 3.0 5.1 937 25.3 621 283 3.0 5.11 937 25.3 621 283 3.0 5.13 5.0.1 0.0.5 0.0.1 5.13 0.0.1 0.0.5 0.0.5 0.0.1 5.13 0.0.1 0.0.5 0.0.5 0.0.1 5.10 1.00 0.80 0.79 0.79 1.00 5.10 1.00 0.80 0.79 0.79 0.70 5.10 1.00 0.80 0.79 0.79 5.10 1.00 0.80 0.79 0.79 5.10 1.00 0.80 0.79 0.79 5.10 1.00 0.80 0.79 0.79 5.10 1.00 0.80 0.79 0.79 5.10 1.00 0.80 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70 0.70 5.10 1.00 0.70 0.70	Clearance Time (s)	4.0	7.0		4.0	7.0	7.0	4.0	7.0		4.0	7.0	7.0
641 937 253 621 283 338 co.13 co.13 co.17 0.02 0.10 0.01 co.10 co.13 co.17 0.05 0.10 0.01 co.10	Vehide Extension (s)	3.0	2.0		3.0	2.0	2.0	3.0	2.0		3.0	2.0	5.0
c0.13 c0.17 0.02 0.10 0.01 o 0.83 0.60 0.32 0.52 0.24 0.25 48.9 37.0 35.0 43.7 41.2 28.3 1.00 1.00 0.80 0.79 0.79 1.00 1.00 1.01 0.80 0.79 0.79 1.00 28.8 35.9 33.3 28.6 E D C D C C 47.9 C D C C 47.9 C D C C 39.6 HCM 2000 Level of Service activatio 0.80 Sum of lost time (s) 22 24 0.03 Sum of lost time (s) 23 25 0.03 Sum of lost time (s) 24 0.03 Sum of lost time (s) 25 0.03 Sum of lost time (s) 26 0.03 Sum of lost time (s)	Lane Grp Cap (vph)	541	937		253	621	283	338	929		379	1468	288
0.08 0.06 0.06 0.06 0.06 0.06 0.06 0.06	v/s Ratio Prot	c0.13	c0.17		0.02	0.10		0.01	c0.26		00.13	0.14	
0.83 0.60 0.32 0.52 0.24 0.22 48.9 37.0 35.0 43.7 41.2 28.3 1.00 1.00 0.80 0.79 0.79 1.00 10.6 1.6 0.7 1.5 0.9 0.3 59.5 38.6 28.8 35.9 33.3 28.6 E D C D C C 47.9 C D C C 28.8 35.9 33.3 28.6 E D C D C C 39.6 HCM 2000 Level of Service 20.80 Sum of lost time (s)	v/s Ratio Perm				90.0		0.05	90.0			0.21		0.08
48.9 37.0 35.0 43.7 41.2 28.3 1.00 1.00 0.80 0.79 0.79 1.00 1.00 0.80 0.79 0.79 1.00 1.00 1.00 0.7 1.5 0.9 0.3 0.3 28.6 28.8 35.9 33.3 28.6 E D C D C C C C C C C D C C D C C C C D C C C C C D C	√c Ratio	0.83	09.0		0.32	0.52	0.24	0.22	0.95		69.0	0.33	0.5
100 1,00 0,80 0,79 1,00 1,00 0,80 0,79 1,00 1,00 0,80 0,3 0,3 0,3 0,3 0,3 0,3 0,3 0,3 0,3 0,	Uniform Delay, d1	48.9	37.0		32.0	43.7	41.2	28.3	45.6		28.6	23.8	22
10.6 1.6 0.7 1.5 0.9 0.3 59.6 58.6 28.8 35.9 33.3 28.6 C C C C C C C C C C C C C C C C C C C	Progression Factor	1.00	1.00		0.80	0.79	0.79	1.00	1.00		0.93	0.37	0.48
9.5 38.6 28.8 35.9 33.3 28.6 E D C D C C 47.9 34.1 D C 33.6 HCM 2000 Level of Service coacity ratio 0.80 Sum of lost time (s) 120.0 Sum of lost time (s) 150% ICU Level of Service 150% ICU	Incremental Delay, d2	10.6	9.		0.7	7.5	6.0	0.3	19.3		4.2	0.5	0
## A T-9	Delay (s)	29.2	38.6		28.8	35.9	33.3	28.6	61.9		30.8	9.5	11.4
47.9 34.1 D C C 39.6 HCM 2000 Level of Service ascity ratio 0.80 Sum of lost time (s) 120.0 Sum of lost time (s) 120.0 Level of Service 15.15.0 Sum of lost time (s)	Level of Service	ш	Ω		O		O	O	ш		O	⋖	
39.6 39.6 0.80 120.0 zation 79.0%	Approach Delay (s)		47.9			34.1			59.4			15.3	
39.6 39.6 0.80 120.0 zation 79.0%	Approach LOS		Ω			O			ш			В	
39.6 39.6 0.80 120.0 zation 79.0%	Intersection Summary												
200 0.80 1.20.0 1.20.0 1.20.0 1.5 1.5	HCM 2000 Control Delay			39.6	ľ	CM 2000	Level of	Service					
120.0 zation 79.0%	HCM 2000 Volume to Capa	acity ratio		0.80									
Utilization 79.0%	Actuated Cycle Length (s)			120.0	S	um of los	time (s)			22.0			
15	Intersection Capacity Utiliza	ation		%0.62	\subseteq	U Level	of Service			□			
	Analysis Period (min)			15									
Critical and Grain	Critical I and Group			:									

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P.(81)24(01)OPA Process\(\text{3. Analysis\(\text{01}\) - SynchrolEXAM\(\text{syn}\) BA Group - EFS

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HCM Unsignalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Existing AM Upper Kerr Village (8124-01)

Movement EBL ane Configurations Figurations (volume (vehin) 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	11. EBT 7.40 5.740 5.740 5.740 6.788 8.0.88 6.841 6.88	15 15 15 17 17 17 17 17 17 17 17 17 17 17 17 17	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBT 590 590 590 0.88	WBR 15	NBL 0	NBT	NBR 20	SBL	SBT 40	SBR
			0 0 88 0	590 590 590 0% 0.88	5 5	00	0	%_ 02	0	4 °	0 0
			0 0 88 0	590 590 Free 0% 0.88	रु ध	0 0	0	20	0	0	0
			0 888	590 0% 0.88	12	c					•
			0.88	6.88 0.88		>	0	20	0	0	>
			0.88	0.88			Stop			Stop	
			0.88	0.88			%0			%0	
			0	0	0.88	0.88	0.88	0.88	0.88	0.88	0.88
edestrians ane Width (m) alking Speed (m/s) sreent Blockage ght turn flare (veh)				0/9	17	0	0	23	0	0	0
ane Width (m) alking Speed (m/s) ercent Blockage ght tum flare (veh)							2			2	
alking Speed (m/s) ercent Blockage ght tum flare (veh) edian tvoe							3.6			3.6	
ercent Blockage ght tum flare (veh) edian tvne										[-	
ght turn flare (veh) edian type							0			0	
edian tvne											
	01.01			None							
Median storage veh)	21 21										
Jpstream signal (m)	01.01			236							
X, platoon unblocked 0.92	01					0.92	0.92		0.92	0.92	0.92
C, conflicting volume 692			863			1202	1558	434	1139	1558	348
C1, stage 1 conf vol											
ol											
'Cu, unblocked vol 481	_		863			1037	1427	434	696	1427	106
C, single (s) 4.1	_		4.1			7.5	6.5	7.0	7.5	6.5	6.9
stage (s)											
	<u>-</u>		2.2			3.5	4.0	3.3	3.5	4.0	3.3
on diverse free %	_		9			9	100	96	100	100	100
cM capacity (veh/h) 996	(0		784			170	123	229	182	123	852
Direction, Lane # EB 1	1 EB2	EB3	WB1	WB2	NB 1	SB 1					
/olume Total 6	5	297	447	240	23	0					
/olume Left 6	9	0	0	0	0	0					
/olume Right 0			0	17	23	0					
966 HS:			1700	1700	529	1700					
/olume to Capacity 0.01	0.33	0.17	0.26	0.14	0.04	0.00					
Queue Length 95th (m) 0.1			0.0	0.0	1.0	0.0					
Control Delay (s) 8.6			0.0	0.0	11.7	0.0					
ane LOS	-				В	∢					
Approach Delay (s) 0.1	_		0.0		11.7	0.0					
pproach LOS					В	∢					
ntersection Summary											
Average Delay		0.2									
ntersection Capacity Utilization		30.9%	S	ICU Level of Service	Service			⋖			
Analysis Period (min)		45									

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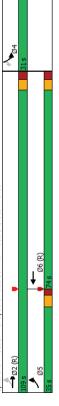
Timings 6: Speers Road/Cornwall Road & Cross Avenue

Existing AM Upper Kerr Village (8124-01)

3.0 3.0 0.0 0.0 None 10.0 15.8 31.0 22.1% 25.2 3.3 2.5 2.5 0.0 5.8 SBR 220 220 Pem Pem 10.0 15.8 31.0 22.1% 25.2 3.3 2.5 0.0 5.8 Prot 3.0 0.0 0.0 None ₹88 ¥ 38.0 47.6 109.0 77.9% 102.4 3.7 2.9 0.0 6.6 5.0 3.0 0.0 0.0 C-Min 10.0 31.0 1125 1125 NA 6.0 12.0 35.0 25.0% 29.0 4.0 2.0 0.0 6.0 6.0 Fest 3.5 3.0 0.0 185 185 pm+pt Switch Phase
Minimum Polit (s)
Minimum Split (s)
Total Split (s)
Total Split (s)
Maximum Green (s)
Yellow Time (s)
Lost Time (s)
Lost Time Adjust (s)
Lost Time Adjust (s)
Lost Time Adjust (s)
Total Lost Time (s)
Lead.Lag Optimize?
Vehicle Extension (s)
Minimum Gap (s)
Time Before Reduce (s)
Fecali Mode
Walt Time (s)
Fesal Mode
Walt Time (s)
Fesal Mode Lane Configurations Traffic Volume (vph) Future Volume (vph) Turn Type
Protected Phases
Permitted Phases
Detector Phase

Cycle Length: 140
Actuated Cycle Length: 140
Offset 19 (17%), Referenced to phase 2.EBTL and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



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Existing AM Quenes

Lane Group Lane Group Lane Group Flow (vph) 218 133 40 Page 133 218 318 32 Queue Delay 32 38 33 38 34 39 34 3	ga g	o. opeers noad/comman noad & choss Avenue			Opper Neil Village (0124-01)
EBL Cow (vph) 218 0.35 3.6 0.0 3.5 3.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	†	ţ	٠	*	
ow (vph) 218 0.35 0.35 0.35 0.00 0.00 0.00 0.00 0.00	EBT	WBT	SBL	SBR	
0.35 0.36 0.0 3.6 500h (m) 8.4 3.5 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	1324	629	9	259	
3.6 0.0 3.6 50th (m) 8.4 3 95th (m) 12.9 4 ist (m) 80.0 (vph) 765 2 (vph) 765 2	0.46	0.26	0.05	09:0	
0.0 3.6 8.4 12.9 47 80.0 765 2	3.6	8.9	8.09	13.1	
3.6 8.4 12.9 47 47 80.0 765 2	0.0	0:0	0.0	0.0	
8.4 12.9 4 80.0 765	3.6	8.9	8.09	13.1	
12.9 80.0 765 0	39.2	28.4	1.6	0.0	
80.0	46.2	36.8	2.8	11.3	
80.0 765 0	474.4	27.7	0.09		
765			45.0		
Starvation Cap Reductn 0	2907	2513	324	681	
	0	0	0	0	
Spillback Cap Reductn 0	0	0	0	0	
Storage Cap Reductn 0	0	0	0	0	
Reduced v/c Ratio 0.28 0.4	0.46	0.26	0.02	0.38	
Intersection Summary					

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P.18112401(DPA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Existing AM Upper Kerr Village (8124-01)

EBL EBT WET WER SEL SER 1								
No. 17 No. 17 No. 17 No. 17 No. 17 No. 18	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
185 1125 540 20 5 220 180 1125 540 20 5 220 190 1900 1900 1900 1900 1900 100 0.95 0.95 1.00 0.88 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.85 1.00 1.00 1.00 1.00 0.85 1.00 1.00 1.00 1.00 0.85 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Configurations	J F	‡	₽		F	K.K	
185 1125 540 20 5 220 1900 1900 1900 1900 1900 100 0.95 0.95 1.00 0.88 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Traffic Volume (vph)	185	1125	240	20	2	220	
1900 1900	Future Volume (vph)	185	1125	240	20	2	220	
100 6.6 6.6 5.8 5.8 5.8 100 100 100 100 100 100 100 100 100 10	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1,000 0.95 0.95 1,00 0.88 1,000 1.00 1.00 1.00 1.00 1.00 1.00 1.0	lotal Lost time (s)	0:0	9.9	9.9		2.8	5.8	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	9:0	0.95	0.95		1.00	0.88	
1,00	Frpb, ped/bikes	0.1	1.00	1.00		1.00	1.00	
1,00	Flpb, ped/bikes	1:00	1.00	1.00		1.00	1.00	
10.95 1.00 0.95 1.00 0.95 1.00 0.37 1.00 1.00 0.95 1.00 0.37 1.00 1.00 0.95 1.00 0.37 1.00 1.00 0.95 1.00 0.37 1.00 1.00 0.95 1.00 0.95 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.8	FT	1:00	1:00	0.99		1.00	0.85	
1685 3471 3447 1805 2608 655 3471 3447 1805 2608 655 3471 3447 1805 2608 655 3471 3447 1805 2608 655 3471 3447 1805 2608 655 6	Fit Protected	0.95	1.00	1.00		0.95	1.00	
Compact Comp	Satd. Flow (prot)	1685	3471	3447		1805	2608	
F	Flt Permitted	0.37	1.00	1.00		0.95	1.00	
F	Satd. Flow (perm)	929	3471	3447		1805	2608	
18	Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
h) 218 1324 658 0 6 19 5 4% 4% 5% 0% 9% 7% 4% 4% 5% 0% 9% 7% 4% 4% 5% 0% 9% 7% 1173 1173 102.0 10.3 10.3 1173 1173 102.0 10.3 10.3 1173 1173 102.0 10.3 10.3 1173 1173 102.0 10.3 10.3 1173 1173 102.0 10.3 10.3 1173 1173 102.0 10.0 0.0 108 6.6 6.6 6.8 5.8 5.8 109 6.6 6.6 6.8 5.8 5.8 100 0.2 c.0.38 0.19 0.00 100 0.02 c.0.38 0.19 0.00 100 1.00 1.00 1.00 1.00 100 1.00 1.	Adj. Flow (vph)	218	1324	635	24	9	259	
hh) 218 1324 658 0 6 19 7% 4% 4% 5% 0% 9% pm+pt NA NA Prot Perm 5 2 6 6 4 4 5) 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 117.3 117.3 102.0 10.3 10.3 10.3 117.3 117.3 102.0 10.3 10.3 10.3 10.3 117.3 117.3 102.0 10.3 10.3 10.3 10.3 10.3 10.3 117.3 117.3 102.0 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10	RTOR Reduction (vph)	0	0	~	0	0	240	
Name	Lane Group Flow (vph)	218	1324	658	0	9	19	
7% 4% 5% 0% 9% pm+pt NA NA Prod Perm 2 6 4 4 2 6 4 4 1 17 17 102 10.3 1 17 17 102 10.3 1 17 17 102 10.3 0 0.8 0.7 0.0 0.0 0 6 6 6 6 5 8 5.8 0 6 <td< td=""><td>Confl. Peds. (#/hr)</td><td>2</td><td></td><td></td><td>2</td><td></td><td></td><td></td></td<>	Confl. Peds. (#/hr)	2			2			
pm+pt NA NA Prot Perm 5 2 6 4 2 1 17.3 102.0 10.3 10.3 1 17.3 17.3 102.0 10.3 10.3 0.84 0.84 0.84 0.73 0.07 0.84 0.84 0.84 0.73 0.07 0.05 0.05 0.19 0.07 0.05 0.09 0.27 0.05 0.10 0.00 0.27 0.05 0.06 0.00 0.27 0.06 0.26 0.00 0.27 0.07 0.00 0.27 0.08 0.19 0.00 0.27 0.09 0.00 0.27 0.00 0.00 0.35 0.46 0.26 0.00 0.40 0.5 0.3 0.1 0.2 0.40 0.5 0.3 0.1 0.2 0.40 0.5 0.3 0.4 0.8 A A B E E A A A B E Capacity ratio 0.45 140.0 Sum of lost time (s)	Heavy Vehides (%)	%2	4%	4%	2%	%0	%6	
5 2 6 4 2 2 4 1 17.3 117.3 102.0 10.3 10.3 1 17.3 117.3 102.0 10.3 10.3 1 0.84 0.84 0.73 0.07 0.07 6 0.86 6.6 6.6 5.8 5.8 6 17 2908 2511 132 191 0.02 0.38 0.19 0.00 0.27 0.40 0.26 0.05 0.1 1.00 1.00 1.00 1.00 2 2 3 3 6 64 60.3 60.5 1 4 0.5 0.3 0.1 0.2 2 9 4 0.5 0.3 0.1 0.2 2 9 3 5 6 6 60.4 60.8 A A A A B E B E B A A A B E C B C B C C B C C C C C C C C C C C C C	Turn Type	pm+pt	ΑN	A		Prot	Perm	
s) 117.3 102.0 10.3 10.3 10.3 10.3 10.3 10.3 10.3 10	Protected Phases	2	2	9		4		
s) 117.3 117.3 102.0 10.3 10.3 1 117.3 117.3 102.0 10.3 10.3 0 0.84 0.73 10.2 10.3 10.3 0.0 0.6 6.6 6.6 5.8 5.8 5.8 0.1 0.0 0.0 3.0 3.0 3.0 10.0 0.1 2.9 2.5 3.0 3.0 10.0 10.0 0.2 0.3 0.4 6.0 6.0 6.0 6.0 6.0 0.4 0.5 0.3 6.0 6.0 6.0 6.0 6.0 0.4 0.5 0.3 0.1 0.2 2 6.0 6.0 6.0 0.4 0.5 0.3 6.0	Permitted Phases	2					4	
117.3 117.3 102.0 10.3 10.3 (0.84 0.84 0.84 0.73 0.07 0.07 (0.07 0.07 0.07 0.07 0.07 0.0	Actuated Green, G (s)	117.3	117.3	102.0		10.3	10.3	
0.84 0.84 0.73 0.07 0.07 0.07 0.07 0.06 0.06 0.06 0.07 0.07	Effective Green, g (s)	117.3	117.3	102.0		10.3	10.3	
1,000	Actuated g/C Ratio	0.84	0.84	0.73		0.07	0.07	
3.5 5.0 5.0 3.0 3.0 6.17 2908 2511 132 191 6.17 2908 2511 132 191 6.28 0.19 0.00 co.01 6.27 0.29 0.46 0.26 0.05 0.10 7.29 3.5 6.6 6.04 60.8 8	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
617 2908 2511 132 191 0.02 c0.38 0.19 0.00 0.27 c0.38 0.19 0.00 0.35 0.46 0.26 0.05 0.10 2.5 3.0 6.4 60.3 60.5 1.00 1.00 1.00 1.00 2 0.9 3.5 6.6 60.4 60.8 A A A A E E C A A A A E C B C C C C C C C C C C C C C C C C C	Vehicle Extension (s)	3.5	5.0	2.0		3.0	3.0	
0.02 c0.38 0.19 0.00 c0.01 c0.02 c0.38 0.19 0.00 c0.01 c0.02 c0.03 c0.05 0.10 c0.01 c0.02 c0.03 c0.05	Lane Grp Cap (vph)	617	2908	2511		132	191	
0.27 0.46 0.26 0.05 0.01 0.03 0.04 0.25 0.46 0.26 0.05 0.10 0.2 0.3 0.10 0.10 0.10 0.10 0.10 0.10 0.10	v/s Ratio Prot	0.02	c0.38	0.19		0.00		
0.35 0.46 0.26 0.05 0.10 2 5. 3.0 6.4 60.5 2 0.4 0.5 0.3 60.5 2 0.4 0.5 0.3 0.1 0.2 2 0.3 5 6.6 60.4 60.8	v/s Ratio Perm	0.27					c0.01	
2.5 3.0 6.4 60.3 60.5 1.00 1.00 1.00 1.00 2 0.4 0.5 0.3 60.6 2.9 3.5 6.6 60.4 60.8 A A A E E E A A A E E A A A E B C A A A A E B C A A A B B C B C A A A B B C B C B C B C B C B C B C B C B C B	v/c Ratio	0.35	0.46	0.26		0.05	0.10	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	2.5	3.0	6.4		60.3	60.5	
2 0.4 0.5 0.3 0.1 0.2 2.9 3.5 6.6 6.0.4 60.8 A A E E E 3.4 6.6 60.7 A A A E 4 0.7 Y Y Capacity ratio 0.45 Sum of lost time (s)	Progression Factor	1:00	1.00	1.00		1.00	1.00	
2.9 3.5 6.6 60.4 60.8 A A A E E A A A E O A B B B B B B B B B B B B B B B B B B	Incremental Delay, d2	0.4	0.5	0.3		0.1	0.2	
A A A E E E 3.4 6.6 60.7 A A E Y Y y elay 10.4 HCM 2000 Level of Service 0.45 Sum of lost time (s)	Delay (s)	2.9	3.5	9.9		60.4	8.09	
3.4 6.6 60.7 A A E Y 10.4 HCM 2000 Level of Service Capacity ratio 0.45 Sum of lost time (s) 140.0 Sum of lost time (s)	Level of Service	∢	∢	<		ш	ш	
y y 10.4 HCM 2000 Level of Service o Capacity ratio 0.45 Sum of lost time (s) th (s)	Approach Delay (s)		3.4	9.9		2.09		
10.4 HCM 2000 Level of Service 0.45 Sum of lost time (s)	Approach LOS		∢	A		ш		
10.4 HCM 2000 Level of Service 0.45 0.47 0.01 of lost time (s)	Intersection Summary							
oacity ratio 0.45 Sum of lost time (s)	HCM 2000 Control Delay			10.4	¥	3M 2000 I	Level of Service	В
140.0 Sum of lost time (s)	HCM 2000 Volume to Capac	city ratio		0.45				
	Actuated Cycle Length (s)			140.0	S	m of lost	time (s)	18.4
Utilization 68.1% ICU Level of Service	Intersection Capacity Utilizat	tion		68.1%	೦	U Level o	f Service	O
Analysis Period (min) 15	Analysis Period (min)			1,5				
				2				

P.181/24(01/OPA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

HCM Uns 7: Kerr S

35

0.85

Stop 0.85 24 24 20 3.6 1.1 24 2

None 262

None 103

0.97

986

30

9 9

315 315 315 0% 0.85 371

490 490 0% 0.85 576

*

1

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Analysis	
Capacity	Drive
Intersection	nce Charles
Unsignalized Intersection Capacity Analysis	err Street & Prince Charles Drive
$\overline{}$	F

Existing AM Upper Kerr Village (8124-01)

Wel. WBT WBR NBI. NBI. NBI. NBI. NBI. NBI. NBI. NBI.	
5 0 0 5 5 0 40 5 0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	NBT NBR SBL SBT
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3.5 4.0 3.6 3.5 4.0 3.4 34 37 100 99 97 100 90 97 100 90 1190 230 601 216 230 458 11 2 54 619 465 6 6 48 6 6 48 6 6 48 6 6 48 6 6 48 6 6 48 6 6 48 6 6 48 6 6 8 8 73 0.04 0.13 0.01 0.05 11.0 3.4 0.1 1.3 18.0 15.2 0.2 1.6 C A A A A A A B B B B B B B B B B B B B	4.2
3.5 4.0 3.6 3.5 4.0 3.4 190 190 190 190 190 190 190 190 190 190	
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12 54 619 466 6 6 8 8 6 6 8 8 8 6 6 8 8 8 70 000 000 000 000 000 000 000 00	
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P.:81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

35 1700 0.24 0.0 0.0 2.2 99 121 582 6 0 0.01 0.01 0.2 A A A 3.3 98 636 3.5 92 284 Direction, Lane #
Volume Total
Volume Left
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SSH
Volume to Capacity
Queue Length Sth (m)
Control Delay (s)
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Sign Control
Grade
Grade
Grade
Feak Hour Factor
Hourly flow rate (vph)
Pedestrians
Lane Width (m)
Median toppe
Median type
Median toppe web)
Median storage web)
Lipstream signal (m)
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Coult unblocked vo

ICU Level of Service 0.7 41.3% 15 Average Delay Intersection Capacity Utilization Analysis Period (min)

0.0

Approach Delay (s) Approach LOS

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

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Timings Existing AM 9: Kerr Street & Stewart Street

→	SBT	4	245	245	Α̈́	9		9		24.0	32.0	45.0	%0.09	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
۶	SBL		40	40	pm+pt	_	9	~		0.9	10.0	10.0	13.3%	7.0	3.0	0.0			Lead	Yes	3.0	3.0	0.0	0.0	None									
←	NBT	4	385	382	Ϋ́			5		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		2	2	Perm		2	7			32.0											3.0	0.0	0.0	C-Min	10.0	14.0	32				Green		
ļ	WBT	4	32	32	ΑA	80		∞			30.0		-								4.0	3.0	0.0	0.0	None	10.0	13.0	20				., Start of		
\	WBL		15	15	Perm		∞	∞			30.0										4.0	3.0	0.0	0.0	None	10.0	13.0	20				nd 6:SBTI		
†	EBT	4	52	22	ΑA	4		4			30.0		-				0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				:NBTL ar		
4	EBL		32	32	Perm		4	4			30.0										4.0	3.0	0:0	0.0	None	10.0	13.0	20				to phase 2		ınateu
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control I ype: Actuated-Coordinated

Splits and Phases: 9: Kerr Street & Stewart Street

10s | 15s |

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

Queues	9: Kerr Street & Stewart Street

Existing AM Upper Kerr Village (8124-01)

Lane Group EBT WBT NBT SBT Lane Group Flow (vph) 79 146 500 385 Wic Ratio 0.27 0.38 0.43 0.38 Control Lelay 2.3 1.35 9.4 8.5 Queue Length Soft (m) 2.3 1.35 9.1 8.5 Queue Length Soft (m) 9.6 7.9 21.7 15.5 Queue Length Soft (m) 7.6 36.6 14.1 7.0 In memal Link Dist (m) 7.6 36.6 14.1 7.0 Barvation Cap Reductin 0 0 0 0 Spillback Cap Reductin 0 0 0 0 Storage Cap Reductin 0 0 0 0 Out Spillback Cap Reductin 0 0 0 0 </th <th></th> <th>†</th> <th>ļ</th> <th>←</th> <th>_</th> <th></th>		†	ļ	←	_	
79 146 500 027 038 043 238 13.5 9.1 0.0 0.0 0.0 23.8 13.5 9.1 9.6 7.9 27.7 15.4 15.9 55.5 71.6 36.6 141.0 0 0 0 0 0 0 0.17 0.26 043	Lane Group	EBT	WBT	NBT	38T	
027 038 043 238 13.5 9.1 0.0 0.0 0.0 23.8 13.5 9.1 154 15.9 21.7 154 15.9 55.5 71.6 36.6 141.0 0 0 0 0 0 0 0.17 0.26 0.43	Lane Group Flow (vph)	79	146	200	385	
23.8 13.5 9.1 0.0 0.0 23.8 7.9 21.7 15.4 15.9 55.5 4 71.6 36.6 141.0 1 0 0 0 0 0 0	v/c Ratio	0.27	0.38	0.43	1.38	
23.8 13.5 9.1 9.6 7.9 21.7 15.4 15.9 65.5 71.6 36.6 141.0 0 0 0 0 0 0 0.17 0.26 0.43	Control Delay	23.8	13.5	9.1	8.5	
23.8 13.5 9.1 96 7.9 21.7 15.4 15.9 26.5 71.6 36.6 141.0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.0	0.0	
9.6 7.9 21.7 15.4 15.9 55.5 71.6 36.6 141.0 0 0 0 0 0 0	Total Delay	23.8	13.5	9.1	8.5	
15.4 15.9 55.5 71.6 36.6 141.0 463 554 1156 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (m)	9.6	7.9	21.7	5.5	
71.6 36.6 141.0 463 564 1156 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (m)	15.4	15.9	55.5	11.8	
463 564 1156 0 0 0 0 0 0 0 0 0 0 0 0 0.17 0.26 0.43	Internal Link Dist (m)	71.6	36.6	141.0	0.0	
463 564 1156 0 0 0 0 0 0 0 0 0 0 0 0 0.17 0.26 0.43	Turn Bay Length (m)					
0 0 0 0 0 0 0 0 0 0.17 0.26 0.43 0.3	Base Capacity (vph)	463	264	1156	025	
0 0 0 0 0 0 0 0 0 0.17 0.26 0.43 0.3	Starvation Cap Reductn	0	0	0	0	
otn 0 0 0 0 0 0 0 0 0 0.17 0.26 0.43	Spillback Cap Reductn	0	0	0	0	
0.17 0.26 0.43	Storage Cap Reductn	0	0	0	0	
	Reduced v/c Ratio	0.17	0.26	0.43	1.38	
Viewasia City and Cit	Intersection Summary					

P.(81/24)01/OPA Process)3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

> Synchro 11 Report Page 17

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

Movement EBI EBI EBI MBI		4	†	>	>	↓	4	•	←	4	٠	→	*
100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900 1900	Lane Configurations		4			4			4			4	
100 1900 1	Traffic Volume (vph)	32	52	2	15	32	02	2	382	20	40	245	30
1900 1900	Future Volume (vph)	32	22	2	15	32	20	2	382	20	40	245	30
1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 100	Total Lost time (s)		5.4			5.4			5.4			5.4	
100 0.97 1,00 0.99 1,00 1	Lane Util. Factor		1:00			1.00			1.00			1.00	
100 0.99 1.00 1	Frpb, ped/bikes		1:00			0.97			1.00			0.99	
1,00 0.99 0.92 0.99 0.90	Flpb, ped/bikes		0.39			1.00			1.00			1.00	
1700 1000	Fr		0.99			0.92			0.99			0.99	
1700 1607 1773 1722 1722 1720	FIt Protected		0.97			0.99			1.00			0.99	
100 0.80 0.96 1.00 0.90 1402 1629 1663 1.00 0.90 1403 1402 1634 1.00 1.00 1403 162 0.82 0.82 0.82 0.82 0.82 0.82 0.82 1403 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 1403 0.82 0.82 0.82 0.82 0.82 0.82 0.82 150 0.20 0.20 0.20 0.00 0.00 0.00 150 0.20 0.20 0.20 0.00 0.00 0.00 150 0.20 0.20 0.20 0.65 0.65 150 0.20 0.20 0.65 0.65 0.65 150 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.05 0.05 0.05 150 0.20 0.25 0.02 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.25 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.05 0.05 0.05 0.05 150 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.05 0.05 0.05 0.05 150 0.20 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.20 0.05 0.05 0.05 150 0.20 0.20 0.20 0	Satd. Flow (prot)		1700			1607			1773			1722	
1402	Flt Permitted		0.80			96.0			1.00			0.90	
IF 0.82 0.83 0.83 0.83 0.84 0.93 0	Satd. Flow (perm)		1402			1549			1767			1563	
1	Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
hy) 0 5 0 0 68 0 0 1 0 0 4 0 20 20 20 20 30 35 35 35 20 20 20 20 30 30 35 35 20 20 20 20 30 30 35 35 20 20 20 20 30 30 35 35 20 20 20 20 30 30 30 35 20 20 20 20 30 30 30 35 2 0 0 0 2 0 0 0 0 0 0 4 4 4 8 8 2 6 6 5) 152 152 49.0 69 69 5) 152 152 49.0 69 5) 152 152 49.0 69 5) 152 152 0.20 0.65 5 4 0 0 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0	Adj. Flow (vph)	43	8	9	9	43	82	9	470	24	49	299	37
bh) 0 74 0 0 78 0 0 499 0 0 381 28 28 28 28 28 28 28 28 28 28 28 28 28 2	RTOR Reduction (vph)	0	2	0	0	89	0	0	-	0	0	4	0
20 20 20 30 35 35 6% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%	Lane Group Flow (vph)	0	74	0	0	28	0	0	499	0	0	381	0
2% 7% 16% 0% 5% 4% 2% 6%	Confl. Peds. (#/hr)	20		20	20		20	8		35	35		30
Dem NA Perm	Heavy Vehicles (%)	2%	42	16%	%0	2%	4%	28%	%9	%0	5%	%9	%9
Single Service Barriage Bar	Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	4	0
s) 4 4 8 8 2 2 1 15	Turn Type	Perm	A		Perm	ΑN		Perm	A		pm+pt	¥	
s) 4 8 8 2 6 6 6 6 6 6 6 7 152 6 9 10 6 6 6 6 9 1 152 6 9 10 6 1 152 6 9 10 1 152 6 9 10 1 152 6 9 10 10 1 152 6 9 10 1 154 7	Protected Phases		4			∞			2		~	9	
s) 15.2 15.2 49.0) 15.2 15.2 49.0) 0.20 0.20 0.65 5.4 5.4 5.4 4.0 4.0 4.0 2.84 31.3 1154 0.05 0.05 0.05 0.028 0.05 0.05 0.05 0.03 2.50 25.1 6.3 2.50 25.7 1.0 0.7 0.6 1.00 1.00 0.8 25.7 7.5 0.8 25.7 7.5 0.9 0.7 0.6 1.2 0.8 25.7 7.5 0.9 0.7 0.6 1.2 0.8 25.7 7.5 0.9 0.7 0.6 1.2 0.8 25.7 7.5 0.9 0.4 10.7 HCM 2000 Level of Service B Hollization 0.41 13.8 Int (s) 75.0 Sum of lost time (s) 13.8 Int (s) 75.0 Sum of lost time (s) 13.8 Int (s) 75.0 Sum of lost time (s) 13.8	Permitted Phases	4			œ			2			9		
15.2 15.2 49.0 0.20 0.20 0.05 5.4 5.4 5.4 4.0 4.0 4.0 4.0 4.0 4.0 5.4 5.4 5.4 5.4 5.4 5.4 6.0 2.8 3.13 1.154 6.0.26 0.0.5 0.0.2 7.5 0.25 0.25 7.5 0.25 0.43 7.5 0.25 0.43 7.5 0.2 0.2 7.5 0.2 0.2 7.5 0.2 7.5 0.2 7.5 0.2 7.5 0.3 7.5 0.4 HCM 2000 Level of Service 7.5 0.4 HCM 2000 Level of Service 8 0.4 HCM 2000 Level of Service 8 0.4 HCM 2000 Level of Service 9 0.4 HCM 2000 Level of Service 10.7 HCM 2000 Level of Service 10.7 HCM 2000 Level of Service 10.7 HCM 2000 Level of Service 10.8 0.4 HCM 2000 Level of S	Actuated Green, G (s)		15.2			15.2			49.0			49.0	
0.20	Effective Green, g (s)		15.2			15.2			49.0			49.0	
5.4	Actuated g/C Ratio		0.20			0.20			0.65			0.65	
40	Clearance Time (s)		5.4			5.4			5.4			5.4	
20.05 0.05 0.028 0	Vehicle Extension (s)		4.0			4.0			4.0			4.0	
Color	Lane Grp Cap (vph)		284			313			1154			1021	
COOS 0.05 co.28 CC 28 CO.28 CO.28 CO.28 CO.28 CO.28 CO.28 CO.29 CO	v/s Ratio Prot												
25.2 25.1 6.3 25.2 25.1 6.3 25.2 25.1 6.3 25.2 25.1 1.00 2 0.7 0.6 1.12 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 10.7 HCM 2000 Level of Service B Capacity ratio 0.41 HCM 2000 Level of Service B Capacity ratio 0.41 1.38 25.0 Sum of lost time (s) 13.8 25.0 Sum of lost time (s) 13.	v/s Ratio Perm		c0.05			0.05			c0.28			0.24	
25.2 25.1 6.3 1.00 1.00 1.00 1.00 2 0.7 0.6 1.2 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 10.7 HCM 2000 Level of Service B 11.8 10.7 HCM 2000 Level of Service B 11.9 75.0 Sum of lost time (s) 13.8 13.8 14.5	v/c Ratio		0.26			0.25			0.43			0.37	
100 100	Uniform Delay, d1		25.2			25.1			6.3			0.9	
2 0.7 0.6 1.2 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 25.8 25.7 7.5 3.9 3.9 3.9 3.9 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Progression Factor		1.00			1.00			1.00			1.00	
258 257 7.5 C C A A 25.8 25.7 7.5 O A A O C C A A O C C A A O C C B A O Capacity ratio 0.41 CM 2000 Level of Service B Iff (s) 75.0 Sum of lost time (s) 13.8 Iff (s) 15.0 Sum	Incremental Delay, d2		0.7			9.0			1.2			0.2	
C C C A 25.8 25.7 7.5 C C A Y Y Y HCM 2000 Level of Service B In (s) 75.0 Sum of fost time (s) 13.8 In (s) 75.0 Sum of fost tim	Delay (s)		25.8			25.7			7.5			6.2	
25.8 25.7 7.5 C C A A Y Y Y HCM 2000 Level of Service B In (s) 75.0 Sum of lost time (s) 13.8 In (s) 75.0 Su	Level of Service		O			O			∢			⋖	
Y C C A Pelay 10.7 HCM 2000 Level of Service B o Capacity ratio 0.41 B B v Usilization 64.5% ICU Level of Service C v Usilization 64.5% ICU Level of Service C up 15 Up Level of Service C	Approach Delay (s)		25.8			25.7			7.5			6.2	
10.7 HCM 2000 Level of Service pacity ratio 0.41 Sum of lost time (s) 75.0 Sum of lost time (s) 2ation 64.5% ICU Level of Service 15	Approach LOS		ပ			ပ			⋖			⋖	
10.7 HCM 2000 Level of Service pacity ratio 0.41 75.0 Sum of lost time (s) 75.0 Sum of lost time (s) 2ation 64.5% ICU Level of Service 15	Intersection Summary												
Capacity ratio 0.41 h (s) 75.0 Sum of lost time (s) Utilization 64.5% ICU Level of Service 15	HCM 2000 Control Delay			10.7		M 2000	Level of S	service		В			
h (s) 75.0 Sum of lost time (s) Utilization 64.5% ICU Level of Service 15	HCM 2000 Volume to Capacit	ity ratio		0.41									
Ulitzation 64.5% ICU Level of Service 15 10 Pevice	Actuated Cyde Length (s)			75.0	Su	m of lost	time (s)			13.8			
Q.	Intersection Capacity Utilization	on		64.5%	⊴	U Level o	f Service			O			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

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Aft Po P. C. Timings 10: Dorva

		Existing AM
: Dorval Koad & Wyecroft Koad	•	Upper Kerr VIIIage (8124-01)

→	SBT	4413	905	902	₹	9		9		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0:0	0.0	C-Min	7.0	27.0	0								Ì	+04
٠	SBL	K.	145	145	Prot	-		-		7.0	12.0			12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None											<u>'</u>	9
←	NBT	4413	1110	1110	≱	2		2		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0									_
•	NBL	r	110	110	pm+pt	2	2	2		7.0	12.0	17.0	14.2%	12.0	3.0	5.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							of Green				1	▲
ļ	WBT	₽ ₽	120	120	Ϋ́	∞		∞		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				3T, Start o					
-	WBL	F	20	20	pm+pt	က	∞	က		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SE			off Road		
†	EBT	₩	115	115	Ϋ́	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				e 2:NBTL			& Wyear		
1	EBL	K.	215	215	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							d to phas		linated	10: Dorval Road & Wyecroft Road	2	2
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Splits and Phases: 10: Don	-	102 (R)

P\\81\24\01\0PA Process\\3. Analysis\\01 - Synchro\EXAM\syn BA Group - EFS

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♦ Ø6 (R)

Existing AM Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

25.3 0.0 25.3 0.0 25.3 87.6 122.6 0.65 2238 SBL 158 0.44 53.6 53.6 53.6 18.2 28.0 125.0 379 0.42 NBT 1272 0.55 10.9 0.0 10.9 65.8 m88.1 0.55 65.0 259 0 0 0 0 347 347 0.64 24.0 24.0 15.2 29.0 199.3 22 22 0.09 29.4 0.0 29.4 3.7 9.2 145.0 351 239 0.30 21.4 0.0 21.4 11.6 24.4 155.6 234 0.60 0.00 0.0 0.0 56.6 56.6 27.0 40.0 416 0 0 0 0 0 0 0 ve Ratio
Control Delay
Queue Delay
Queue Bength 50th (m)
Queue Length 56th (m)
Queue Length 95th (m)
Inhamal Link Dist (m)
Base Capacity (vph)
Base Capacity (vph)
Starvation Cap Reductn
Spillack Cap Reductn
Storage Cap Reductn
Reduced vic Ratio Lane Group Flow (vph)

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal.

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P:1811241011OPA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Existing AM Upper Kerr Village (8124-01)

	4	†	<i>></i>	>	Ļ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K	₩		r	₩		r	4413		K.	4413	
Traffic Volume (vph)	215	115	105	20	120	200	110	1110	09	145	902	440
Future Volume (vph)	212	115	105	50	120	200	110	1110	09	145	902	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
I otal Lost Ime (s)	0.0	0. 5		0.0	0.5		0.0	0.7		0.0	5.5	
Emb ped/bikes	1.00	0.90		0.0	0.95		00.1	1001		100	100	
Flob. ped/bikes	00.0	1.00		100	1.00		100	100		100	8.0	
± ± ±	1.00	0.93		1.00	0.91		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3127	3066		1637	3141		1641	5029		3433	4649	
Flt Permitted	0.95	1.00		0.60	1.00		0.10	1.00		0.95	1.00	
Satd. Flow (perm)	3127	3066		1039	3141		180	5029		3433	4649	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	125	114	22	130	217	120	1207	92	158	984	478
RTOR Reduction (vph)	0	88	0	0	188	0	0	4	0	0	24	0
Lane Group Flow (vph)	234	151	0	22	159	0	120	1268	0	158	1405	0
Confl. Peds. (#/hr)	2		က	က		2	-					_
Heavy Vehides (%)	12%	%/	%6	10%	2%	2%	10%	2%	1%	2%	2%	%2
Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
Turn Type	Prot	Ν		pm+pt	¥		pm+pt	¥		Prot	A	
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases				∞			2					
Actuated Green, G (s)	14.9	27.3		20.2	16.3		63.5	52.1		12.7	53.4	
Effective Green, g (s)	14.9	27.3		20.2	16.3		63.5	52.1		12.7	53.4	
Actuated g/C Ratio	0.12	0.23		0.17	0.14		0.53	0.43		0.11	0.44	
Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	2.0		2.0	7.0	
Vehide Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	388	269		194	426		234	2183		363	2068	
v/s Ratio Prot	c0.07	0.05		0.00	c0.05		c0.05	0.25		0.05	00.30	
v/s Ratio Perm				0.02			0.22					
v/c Katio	0.60	0.22		0.11	0.37		0.51	0.58		0.44	0.68	
Unitorm Delay, d1	49.8	37.7		42.1	47.2		77.7	7.22.7		50.3	70.5	
Progression Factor	8.0	0.0		00.1	0.1		0 2	0.42		0.1	3.5	
Incremental Delay, uz Delay (e)	ا ا ا	38.0		40.0	787		7.27	11.0		520	0.00	
Lovel of Consiso	3	3		2.4	ָב ב		3	1 0		0.50	5.0	
Approach Dolor (c)	2	7 27		ב	9 6		>	2 2		2	2 0 0	
Approach Delay (s)		1.04			40.0			12.4			30.0	
Approach LOS					٥			m			O	
Intersection Summary												
HCM 2000 Control Delay			27.6	Ĭ	HCM 2000 Level of Service	evel of S	ervice		ပ			
HCM 2000 Volume to Capacity ratio	ity ratio		09.0									
Actuated Cycle Length (s)			120.0	ઝ :	Sum of lost time (s)	time (s)			24.0			
Intersection Capacity Utilization	o		%8.0/	2	ICU Level of Service	Service			S			
Analysis Period (min)			15									
c Critcal Lane Group												

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXAM.syn BA Group - EFS

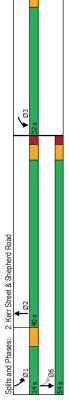
HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroff Road

	4	>	€	←	→	*
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	Þ		r	4	£	
Traffic Volume (veh/h)	52	110	100	635	490	110
Future Volume (Veh/h)	52	110	100	635	490	110
Sign Control	Stop			Free	Free	
Grade	%0			%0	%0	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	118	108	683	527	118
Pedestrians	2					
Lane Width (m)	3.6					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
	1490	591	650			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1490	591	650			
tC, single (s)	6.4	6.2	4.2			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.3			
p0 queue free %	28	9/	88			
cM capacity (veh/h)	121	201	913			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1		
Volume Total	145	108	683	645		
Volume Left	27	108	0	0		
Volume Right	118	0	0	118		
SH	316	913	1700	1700		
Volume to Capacity	0.46	0.12	0.40	0.38		
oth (m)	17.5	3.0	0.0	0.0		
Control Delay (s)	25.7	9.5	0.0	0.0		
Lane LOS	۵	⋖				
Approach Delay (s)	25.7	£.		0.0		
Approach LOS	Ω					
Intersection Summary						
Average Delay	l	l	0 %	l	l	
Average Delay			2.0	<u></u>	CIT I evel of Service	a sisterial and a sisterial an
Analysis Doriod (min)			45.0	2	FG AG	
Alialysis rende (min)			2			

P.181124011OPA Process\3. Analysis\01 - Synchro\EXPM syn BA Group - EFS

Timings
2: Kerr Street & Shepherd Road Upper Kerr Village (8124-01)

Lane Group	WBL	NBT	SBL	SBT	
Lane Configurations	>	₩\$		₩.	
Traffic Volume (vph)	8	240	155	410	
Future Volume (vph)	06	240	155	410	
Turn Type	Prot	Ϋ́	pm+pt	Ν Α	
Protected Phases	က	2	_	9	
Permitted Phases			9		
Detector Phase	က	2	~	9	
Switch Phase					
Minimum Initial (s)	10.0	18.0	7.0	18.0	
Minimum Split (s)	31.4	28.2	11.0	28.2	
Total Split (s)	32.0	40.0	14.0	54.0	
Total Split (%)	37.2%	46.5%	16.3%	62.8%	
Maximum Green (s)	26.6	34.8	10.0	48.8	
Yellow Time (s)	3.3	3.3	4.0	3.3	
All-Red Time (s)	2.1	6.	0.0	6.	
Lost Time Adjust (s)	0.0	0.0		0.0	
Total Lost Time (s)	5.4	5.2		5.2	
Lead/Lag		Lag	Lead		
Lead-Lag Optimize?		Yes	Yes		
Vehide Extension (s)	3.0	3.5	2.5	3.5	
Minimum Gap (s)	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	
Recall Mode	None	Ξ	None	E.	
Walk Time (s)	10.0	10.0		10.0	
Flash Dont Walk (s)	16.0	13.0		13.0	
Pedestrian Calls (#/hr)	0	2		2	
Intersection Summary					
Cycle Length: 86					
Actuated Cycle Length: 41.9	6				
Natural Cycle: 75					



Existing PM Ouenes

Quenes				Existing PM
2: Kerr Street & Shepherd Road	epherd I	Road		Upper Kerr Village (8124-01)
	1	←	→	
Lane Group	WBL	NBT	SBT	
Lane Group Flow (vph)	242	929	583	
v/c Ratio	0.47	0.41	0.52	
Control Delay	11.9	7.7	2.6	
Queue Delay	0.0	0.0	0.0	
Total Delay	11.9	7.7	5.6	
Queue Length 50th (m)	9.7	12.8	12.6	
Queue Length 95th (m)	25.5	26.3	27.4	
Internal Link Dist (m)	241.3	143.2	2.5	
Turn Bay Length (m)				
Base Capacity (vph)	1104	2888	2343	
Starvation Cap Reductn	0	0	0	
Spillback Cap Reductn	0	0	0	
Storage Cap Reductn	0	0	0	
Reduced v/c Ratio	0.22	0.23	0.25	
O collection				

Synchro 11 Report Page 3 P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Existing PM Upper Kerr Village (8124-01)

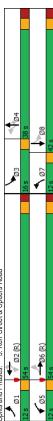
																																							rice A		14.6	Ф	
→	SBT	₩.	410	410	1900	5.2	0.95	00.0	00.1	0.99	3534	99.0	2373	26.0	423	0	283	40/	<u>«</u> c	NA N	9	>	20.0	20.0	0.48	5.2	3.5	021	c0.25	0.51	7.5	1.00	0.5	7.9	∢	7.9	⋖		HCM 2000 Level of Service		st time (s)	ICU Level of Service	
<u>ب</u> ب	NBR SBL		115 155		900 1900										2	0 0			%0 %7	tu+wu	-	- 9																	HCM 2000		Sum of lost time (s)	ICU Level	
←	NBT NE	₩.				5.2	0.95	00.0	0.97	1.00	3424	1.00		0.97 0.		<u></u>	859		% % u	PΝ	0	1	20.0	20.0	0.48	5.2	3.5	0.19	2	0.40	7.0	1.00	0.2	7.2	⋖	7.2	V		8.4	0.54	41.7	63.1%	15
4	WBR		145	145	1900									0.97	149	0	O 1		<u>e</u> c																								
-	WBL	>-	8	6	1900	5.4	0.00	6.0	0.90	0.98	1665	0.98	1665	0.97	සි	<u>ب</u>	1/1	15	% د	Prot			11.1	11.1	0.27	5.4	3.0	010		0.39	12.5	1.00	9.0	13.1	Ω	13.1	В			pacity ratio		zation	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	lotal Lost time (s)	Lane Util. Factor	Flpb, ped/biles	ripo, ped/bikes Frt	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	Rie Blockage (#/hr)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Larie Grp Cap (vpri)	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

P.181/24/01/OPA Process\3. Analysis\01 - Synchro\EXP\M.syn BA Group - EFS

Timings
3: Kerr Street & Speers Road
Upper Kerr Village (8124-01)

Lane Group							-	-	-			
140 140 220 270 140 140 220 270 270 140 140 220 270 270 170 140 220 270 170 140 270 270 140 34.3 34.3 34.3 140 140 140 140 140 140 140 140 140 140	Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
140 140 220 270 1140 140 220 270 1140 140 220 270 140 140 220 270 140 140 140 140 140 140 140 140 140 14	Lane Configurations	<i>y-</i>	₩\$	je-	++	*	*	+	×	F	43	
140 140 220 270 pm+et NA Perm pm+pt 7 4 4 8 7 4 4 8 7 7 0 10.0 10.0 7.0 10.0 34.3 34.3 10.0 10.0% 31.7% 13.3% 31.0 30 31.7 31.7 11.0 30 31.7 31.7 11.0 30 30 3.3 3.3 3.0 00 00 0.0 0.0 00 00 0.0 0.0 00 00 0.0 0.	Traffic Volume (vph)	9	460	285	750	490	140	140	220	270	235	
Pm+pt NA Perm pm+pt 3 4 8 8 7 4 4 8 8 7 7 100 100 7.0 100 34.3 34.3 10.0 10.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Future Volume (vph)	09	460	285	750	490	140	140	220	270	235	
7 4 4 8 3 7 10 100 10.0 7.0 10.0 34.3 34.3 10.0 12.0 38.0 38.0 16.0 10.0% 31.7% 31.7% 13.8% 33.3 3.0 3.3 3.3 3.3 3.0 0.0 3.0 0.0 0.0 3.0 6.3 6.3 6.3 3.0 1ead Lag Lag Lead Yes	Turn Type	pm+pt	ΑA	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	pm+pt	Ν	
7 4 4 8 7 4 4 8 7 0 10.0 10.0 7.0 12.0 34.3 34.3 10.0 10.0% 31.7% 31.7% 13.3% 33 9.0 31.7 31.7 13.0 0.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 14.0 14.0 35 35	Protected Phases	Ψ-	9	2	2		7	4		က	œ	
7 4 4 4 3 70 10.0 10.0 7.0 10.0 34.3 34.3 10.0 10.0% 31.7% 31.7% 13.3% 32 3.0 3.3 3.3 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Permitted Phases	9		2		2	4		4	∞		
7.0 10.0 10.0 7.0 10.0 34.3 34.3 10.0 12.0 38.0 38.0 16.0 30 31.7 31.7 13.0 30 33.3 3.3 3.0 0.0 0.0 0.0 0.0 1.6 4.0 4.0 2.5 3.0 5.3 6.3 6.3 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector Phase	τ-	9	2	2	7	7	4	4	က	œ	
7.0 10.0 10.0 7.0 10.0 7.0 10.0 34.3 34.3 10.0 10.0 31.7 38.0 16.0 10.0 31.7 31.7 13.0 39.0 30.0 30.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Switch Phase											
100 34.3 34.3 10.0 100% 31.7% 31.7% 13.3% 39 9.0 31.7 31.7 13.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 3.0 6.3 6.3 3.0 1.6 7.8 Yes	Minimum Initial (s)	7.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	
120 380 380 160 100% 31.7% 31.3% 31 30 31.7% 31.3% 31 00 31.7% 31.3% 31 00 00 00 00 30 6.3 6.3 6.3 3.0 10 00 00 00 25 40 4.0 2.5 30 30 30 30 00 00 00 00 00 00 00 00 140 140 140 140 35 35	Minimum Split (s)	10.0	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	
10.0% 31.7% 11.3% 31.9 31.9 31.0 31.0 31.0 31.0 31.0 31.0 31.0 31.0	Total Split (s)	12.0	54.0	12.0	54.0	54.0	12.0	38.0	38.0	16.0	45.0	
9.0 31.7 13.0 9.0 31.7 13.0 9.0 3.3 3.3 3.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 2.5 4.0 4.0 2.5 3.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 14.0 35 35	Total Split (%)	10.0%	45.0%	10.0%	45.0%	45.0%	10.0%	31.7%	31.7%	13.3%	35.0%	
30 33 3.3 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Maximum Green (s)	9.0	48.1	9.0	48.1	48.1	9.0	31.7	31.7	13.0	35.7	
0.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.0	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	0.0	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	
3.0 6.3 6.3 3.0 lead Lag Lead Lag Lead Ves Yes Yes Yes Yes You 4.0 2.5 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lead Lag Lead Yes Yes Yes Yes Yes Yes O 2.5 4.0 4.0 2.5 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Total Lost Time (s)	3.0	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Yes Yes Yes Yes 2.5 4.0 4.0 2.5 3.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0	Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
2.5 4.0 4.0 2.5 3.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
30 30 30 30 00 00 00 00 00 00 00 00 None None None N 70 7.0 14.0 14.0	Vehicle Extension (s)	2.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
0.0 0.0 0.0 0.0 None None None None 14.0 14.0 35 35	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
None None None None 7:0 7:0 7:0 14:0 14:0 14:0 13:0 3:0 15:0 15:0 15:0 15:0 15:0 15:0 15:0 15	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7.0 7.0 14.0 14.0 35 35	Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None	None	
	Walk Time (s)		7.0		7.0	7.0		7.0	7.0		7.0	
88	Flash Dont Walk (s)		14.0		14.0	14.0		14.0	14.0		14.0	
Infersection Summary Cycle Length: 120 Actualed Cycle Length: 120 Offset 49 (14%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle 90	Pedestrian Calls (#/hr)		12		15	15		32	35		35	
Cycle Length: 120 Actuared Cycle Length: 120 Offset 49 (47), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle 59	Intersection Summary											
Actuated Cycle Length: 120 Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90	Cycle Length: 120											
Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Ovole: 90	Actuated Cycle Length: 120											
Natural Cycle: 90	Offset: 49 (41%), Referenced	d to phase	2:WBTL	and 6:EB	TL, Start	of Green						
	Natural Cycle: 90											

Splits and Phases: 3: Kerr Street & Speers Road



P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

Queues 3: Kerr Street & Speers Road

Existing PM Upper Kerr Village (8124-01)

	1	†	-	ļ	4	•	←	•	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	63	610	300	789	516	147	147	232	284	310	
v/c Ratio	0.16	0.41	0.62	0.45	0.52	0.53	0.45	0.52	0.65	92.0	
Control Delay	9.7	21.4	20.1	22.0	3.9	33.7	47.2	9.1	36.7	54.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.7	21.4	20.1	22.0	3.9	33.7	47.2	9.1	36.7	54.0	
Queue Length 50th (m)	7.7	50.4	35.3	999	0.0	23.0	31.3	0.0	48.4	65.2	
Queue Length 95th (m)	m13.5	m59.6	55.5	90.5	20.4	36.2	46.6	19.2	68.8	90.5	
Internal Link Dist (m)		211.8		474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0		100.0	20.0		45.0			
Base Capacity (vph)	411	1519	486	1770	1000	282	495	263	437	547	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.15	0.40	0.62	0.45	0.52	0.52	0.30	0.41	0.65	0.57	

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal.

P\\81\24\01\0PA Process\\3. Analysis\\01 - Synchro\EXP\M.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Movement EBI EBI Lane Configurations ↑ ↑↑ Lane Configurations ↑ ↑↑ Traffic volume (vph) 60 460 deal Flow (vphg) 50 1900 Total Lost time (s) 3.0 5.9 Lane Ult Taddor 1.00 0.39 Flipb, ped/bikes 1.00 0.39 Flipb, ped/bikes 1.00 1.00 Flit Permeted 0.35 1.00 Satd. Flow (pcm) 601 3392 Pask-hour factor, PHF 0.35 0.35 Adj. Flow (vph) 63 484 RTOR Reduction (vph) 63 484 RTOR Reduction (vph) 63 484 RTOR Reduction (vph) 63 484 Heavy Vehicles (%) 0.35 Conff. Peds. (#hr) 30 2% Bus Blockages (#hr) 70 0.4 Protected Phases 6 6 Advanted Chann Coles Advanted Chann	120 120 120 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	WBL 285 285 285 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	WBT 750 750 750 750 750 750 750 750 750 750	WBR 490 490 1900 1900 1900 1900 1900 1900 1	NBL 140 140 1900 3.0 1.00 0.99 1.00 0.95 1768 0.36 674 674	140 140 140 140 1.00 1.00 1.00 1.00 1.00	220 220 1900 6.3 1.00	270 270 270 1900 3.0 1.00	235 235 235 1900 6.3	SBR 60 60
pph) 60 (ph) 60 (ph) 60 (ph) 60 (ph) 60 (ph) 1900 19 (ph) 100 100 (ph) 100 100 (ph)	120 120 1900 126 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	285 285 285 1900 3.0 1.00 1.00 1.00 0.35 0.35 0.35 3.00 0.95 3.00 0.95 3.00 0.95 3.00 0.95 3.00 0.95 3.00 0.95 3.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	750 750 1900 1900 1.00 1.00 1.00 1.00 3539 1.00 3539 0.95 789 0.95 789	490 490 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.	140 140 140 130 3.0 1.00 0.99 1.00 0.95 1768 0.36 674 674	140 140 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00	220 220 1900 1.00	270 270 270 1900 3.0 1.00	235 235 1900 6.3	09
ph) 660 4 (ph) 660 4 (ph) 660 4 (ph) 660 161 (ph) 1900 161	120 120 120 126 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	285 1900 3.0 1.00 1.00 1.00 0.35 0.35 0.35 0.35 0.35 0.35 3.00 3.00	750 750 1900 6.9 6.9 1.00 1.00 3539 1.00 3539 7.89 0.95 789 0.95 789	4 990 1 1900 1 100 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 2 5 5 3 0	140 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	140 140 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	220 220 1900 6.3 1.00	270 270 1900 3.0 1.00	235 235 1900 6.3	909
(vph) 60 4 100 1100 1100 1100 1100 1100 1100	120 1900 126 126 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	285 1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	750 1900 5.9 0.95 1.00 1.00 1.00 3539 3539 0.95 789 0	4 990 1 5.9 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 2 5 5 3 0 2 2 5 3 0	140 3.0 3.0 1.00 1.00 1.00 0.35 674 674 147 0	140 6.3 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	1900 6.3 1.00	270 1900 3.0 1.00	235 1900 6.3	09
(very) (v	126 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1900 3.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1900 5.9 0.95 1.00 1.00 1.00 35.39 1.00 35.39 0.95 789 0	1900 1.00 1.00 1.00 1.00 1.00 1.485 1.00 1.485 1.00 1.95 5.16 2.81 2.85 30	3.0 3.0 1.00 1.00 0.95 1.00 0.95 674 0.95 147 0.95	1900 6.3 1.00 1.00 1.00 1.00 1.877 1.00 1.877	6.3	3.0	6.3	000
(vph) 63 (vp	0.95 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.0 1.00 1.100 1.100 0.33 0.33 0.95 300 5 300 5 300 5	5.9 0.95 1.00 1.00 1.00 35.39 35.39 0.95 7.89 0.95 7.89	5.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	3.0 1.00 1.00 1.00 0.95 1.00 0.95 674 0.95 147	6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.877 1.00 1.00	1.00	3.0	6.3	1900
1,000 0 1.00 0 1	0.0 0 0 0 0 0 0 0 0	1.00 1.00 1.00 1.00 0.95 1.75 0.33 300 300 5 300 0	0.95 1.00 1.00 1.00 1.00 3539 3539 0.95 789 0 789 0 789	1.00 0.94 1.00 1.00 1.00 1.00 1.00 5.16 5.16 5.16 2.261 2.25 3.0	1.00 1.00 1.00 1.00 1.768 0.36 1.768 0.36 1.47	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00	1.00		
1.00 0 1.00 0 1.00 0 1.00 0 1.95 1 1.95 0 1.095 0 1.09	0.95 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 1.00 1.00 1.00 1.05 1.05 1.05 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 3.00 0 0 0	1.00 1.00 1.00 1.00 3539 3539 0.95 789 0 789 0 789	0.94 1.00 1.00 1.00 1.00 1.00 1.00 5.16 5.16 5.16 2.26 30 2%	1.00 0.99 1.00 0.95 1.06 6.74 0.95 147	1.00 1.00 1.00 1.00 1.00 1.00 1.00	ccc		1.00	
100 1 100 1 1797 3 1797	0.95 0 0 0 0 0 5 0 0 0 0 0 0 0 0 0 0 0 0 0	1.00 1.00 0.95 0.33 611 611 0.95 300 5 300 5 300 5 300	1.00 1.00 1.00 3539 1.00 0 0 789 0 789 0 789	1.00 1.00 1.00 1.00 1.00 1.00 2.51 2.55 30 2%	0.99 1.00 0.95 1768 0.36 674 0.95 147	1.00 1.00 1.00 1877 1.00 1.00	0.93	0.1	0.99	
1,00 0 0,032 1 1797 33 1 1797 33 1 ((vph) 63 4 (vph) 64 4 (vph) 65 4 (vph) 66 4 (vph) 67 4 (vph) 68	0.95 126 0 0 0 5 5	1.00 0.95 1750 0.33 611 0.95 300 0 300 5 3%	1.00 3539 1.00 3539 789 0 789 0 789	0.85 1.00 1.00 1.00 1.00 0.95 0.95 2.55 30 2%	1.00 1.00 1.768 0.36 674 147	1.00 1.00 1877 1.00 1877 0.95	1.00	0.98	1.00	
(vph) 63 (vph) 83 (vph) 63 (vph) 64 (vph) 65 (vp	0.95 0 0 0 5 0 0 0	0.95 1750 0.33 611 0.95 300 0 300 5 3%	1.00 3539 1.00 3539 0.95 789 0 789 0	1.00 1.00 1.00 1.00 0.95 5.16 2.61 2.61 2.55 30	0.95 0.36 674 0.95 147	1.00 1877 1.00 1877 0.95	0.85	1.00	0.97	
1797 33 10) 6013 1 10,32 0 10,35 0 10,95 0 10,095 0	0.95 126 0 0 0 5 0 0	0.33 0.33 611 0.95 300 0 300 5 5	3539 1.00 3539 0.95 789 0 789 2%	1485 1.00 1.00 0.95 5.16 2.61 2.55 30 2%	0.36 674 0.95 147	1.00 1.00 1877 0.95	1.00	0.95	1.00	
m) 60.32 1 m) 60.32 1 an (vph) 63 6 (vph) 63 (vph) 63 (vph) 63 (vph) 63 (vph) 63 (vph) 64 (vph) 65 (vp	0.95 126 0 0 0 5 0%	0.33 611 0.95 300 300 5 3%	1.00 3539 0.95 789 0 789 2%	1.00 1.00 0.95 516 261 255 30 2%	0.36 674 0.95 147	1.00	1486	1750	1816	
m) 601 3: or, PHF 0.95 0 (%) (%) (%) (%) (%) (%) (%) (%) (%) (%)	0.95 126 0 0 0 0 0 0 0 0	0.95 300 300 300 5 5	35.39 0.95 789 0 789 2% 0	1485 0.95 516 261 255 30	0.95	0.95	1.00	0.51	1.00	
2, PHF 0.95 O	0.95 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	300 300 300 3% 5 3%	0.95 789 789 2% 0	0.95 516 261 255 30 2%	147	0.95	1486	240	1816	
03 (4) (4) (6) (7) (4) (7) (7) (7) (7) (7) (7) (7) (7) (7) (7	126 0 0 0 0 0 0	300 300 300	789 0 789 0	516 261 255 30 2%	147		0.95	0.95	0.95	0.95
ph) 63 (ph) 63 (30 0% 0%) 0 0) pm+pt f 6	0 0 % 20 0	3% 200	0 789 0 0	261 255 30 2%	0 147	147	232	284	247	63
(c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	0 %0	3% 200	789 2% 0	255 30 2%	47	0	192	0	6	0
30 0% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	5 %0	3% 2	2%	% %	/+/	147	40	284	301	0
0 %0 0 m +pt	%0	3%	0 0	%	32		35	32		35
hr) 0 0 pm+pt	0	0	0		%	%0	1%	%	%0	%0
pm+pt 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6				0	0	က	0	0	0	0
6 6 6 8 8 8 8 8 8 8 8 8 8		pm+pt	Α	Perm	pm+pt	Ν	Perm	pm+pt	¥	
9 2 (9)		2	2		7	4		က	∞	
788		2		2	4		4	∞		
0.00		68.5	59.4	59.4	30.8	50.9	50.9	39.3	26.4	
s) 58.5		68.5	59.4	59.4	30.8	20.9	20.9	39.3	26.4	
0		0.57	0.49	0.49	0.26	0.17	0.17	0.33	0.22	
		3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	
Vehicle Extension (s) 2.5 5.5		2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	
Lane Grp Cap (vph) 353 1481		473	1751	735	263	326	258	411	388	
		c0.07	0.22		0.02	0.08		c0.09	c0.17	
Perm 0.08		c0.29		0.17	0.10		0.03	0.14		
0.18		0.63	0.45	0.35	0.56	0.45	0.16	69.0	0.76	
		14.3	19.7	18.5	36.4	4.4	42.1	32.6	43.8	
0.73		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
ıtal Delay, d2 0.1		2.4	8.0	<u>ر.</u> دن	2.1	4.	0.4	4.6	8.4	
12.2 21		16.7	20.5	19.8	38.5	45.8	42.5	37.2	52.2	
œ		ш	ပ	ш	۵	۵	۵	۵	۵	
y (s) 20.			19.6			42.3			45.0	
Approach LOS C			ш			Ω			Ω	
Intersection Summary										
HCM 2000 Control Delay	27.7	모	HCM 2000 Level of Service	evel of S	ervice		O			
HCM 2000 Volume to Capacity ratio	0.70									
Actuated Cycle Length (s)	120.0	Sur	Sum of lost time (s)	ime (s)			18.2			
Intersection Capacity Utilization	83.1%	<u>ე</u>	ICU Level of Service	Service			ш			
Analysis Period (min)	15									

P.18112401/0PA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

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Timings
4: Dorval Road & Speers Road

	1	†	-	↓	4	•	←	۶	-	•	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	ř.	₩.	je-	‡	*	<u></u>	₩.	<u></u>	‡	¥C_	
Traffic Volume (vph)	415	410	195	260	455	65	230	240	595	375	
Future Volume (vph)	415	410	195	260	455	92	530	240	295	375	
Turn Type	Prot	Ϋ́	pm+pt	Ϋ́	Perm	pm+pt	≨	pm+pt	Α̈́	Perm	
Protected Phases	7	4	က	∞		2	2	~	9		
Permitted Phases			∞		∞	2		9		9	
Detector Phase	7	4	က	∞	∞	2	2	~	9	9	
Switch Phase											
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	11.0	45.0	45.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	24.0	47.0	19.0	45.0	45.0	11.0	41.0	13.0	43.0	43.0	
Total Split (%)	20.0%	39.2%	15.8%	35.0%	35.0%	9.5%	34.2%	10.8%	35.8%	35.8%	
Maximum Green (s)	20:0	40.0	15.0	35.0	35.0	7.0	34.0	9.0	36.0	36.0	
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	1.0	3.0	3.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	4.0	7.0	7.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0		7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		28.0		28.0	28.0		26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2		2	2		2		2	2	
Intersection Summary											
Cycle Length: 120											
Actuated Cycle Length: 120											
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB	TL, Start o	of Green						
Natural Cycle: 105											
Control Type: Actuated-Coordinated	rdinated										
Splits and Phases: 4: Dor	4: Dorval Road & Speers Road	Speers F	Road								
, a co				_	١		Ť				
410				100	co		10, 10	i			

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Queues 4: Dorval Road & Speers Road

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Existing PM Upper Kerr Village (8124-01)

EBT WBL WBT 500 212 609 0.44 0.47 0.63 32.0 19.1 35.1 0.0 0.0 32.0 19.1 35.1 43.8 6.22 39.8 6.79 412.3 85.0 1.22 440 10.48 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.										
### FBT WBL WBT 451 500 212 609 609 618 20.44 0.47 0.63 618 32.0 19.1 35.1 618 32.0 19.1 35.1 618 42.0 618 412.3 412.3 610 610 610 610 610 610 610 610 610 610	† *\	<u> </u>	Ļ	4	•	—	۶	→	•	
451 500 212 609 0.82 0.44 0.47 0.63 0.82 0.44 0.47 0.63 0.0 0.0 0.0 0.0 61.8 320 19.1 35.1 62.4 43.6 18.4 38.6 #72.0 67.3 472.1 60.0 85.0 778 120 480 1043 0 0 0 0 0 0 0 0 0 0 0 0	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
0.82 0.44 0.47 0.63 0.63 0.00 0.00 0.00 0.00 0.00 0.00		212	609	495	71	658	261	647	408	
61.8 320 19.1 35.1 0.0 0.0 0.0 0.0 0.1.8 32.4 43.6 18.4 38.6 #72.0 62.0 39.8 67.9 412.3 472.1 60.0 39.8 67.9 412.3 472.1 57.8 1202 480 1043 0		0.47	0.63	0.88	0.23	99.0	0.84	0.53	0.50	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		19.1	35.1	35.8	23.5	41.2	26.8	17.3	2.1	
61.8 32.0 19.1 35.1 25.1 25.2 4 33.6 184 88.6 #72.0 6.00 85.0 85.0 578 120.2 480 1043 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
52.4 43.6 18.4 38.6 #72.0 62.0 39.8 67.9 412.3 60.0 60.0 85.0 57.8 1202 480 1043 0 0 0 0 0 0 0		19.1	35.1	35.8	23.5	41.2	26.8	17.3	2.1	
#72.0 62.0 39.8 67.9 412.3 472.1 60.0 85.0 1043 578 1202 480 1043 0 0 0 0 0 0 0 0		18.4	38.6	27.6	10.4	72.8	~38.9	22.0	0.2	
60.0 472.1 472.1 60.0 60.0 60.0 60.0 60.0 60.0 60.0 60		39.8		#122.4	19.2	90.5	m#72.9	34.8	m0.9	
60.0 85.0 578 1202 480 1043 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	412.3	7	172.1			621.6		494.4		
578 1202 480 1043 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.09	85.0		22.0	0.07		110.0			
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		480	1043	293	306	1053	312	1238	820	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0	0	0	0	0	0	0	0	
0.78 0.42 0.44 0.58	0	0	0	0	0	0	0	0	0	
11:50	0.78 0.42	0.44	0.58	0.83	0.23	0.62	0.84	0.52	0.50	
Inforcection Climmony										

rnersection surmanary

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

Bish percentie volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

The cycle of the percentile queue is metered by upstream signal.

He cost of the cos	560 455 560 455 560 455 560 455 560 650 7.0 7.0 7.0 7.0 1.00 0.98 1.00 1.00 1.00 0.85 1.00 1.00	5 65	4	75	-	3	5
415 410 50 415 410 50 1900 1900 1900 0 4.0 7.0 90 1.00 1.00 1.00 0.98 1.00 0.92 1.00 0.92 1			<u>*</u>	75	_		
415 410 50 410 1900 1900 1900 40 410 7.0 610 1.00 1.00 1.00 1			117.9		010	- 101	C
1900 1900 1900 1900 1900 1900 1900 1900	_ , , , , ,		000	2 2	040	ממט	275
1900 1900 1900 1900 1900 1900 1900 1900			220	0 00	7000	292	S 5
4.0 7.0 0.97 0.95 1.00 1.00 1.00 0.98 0.95 1.00 3.433 3.492 0.93 0.93 0			1900	1900	0061	0061	0061
0.97 0.95 1.00 1.00 1.00 1.00 1.00 0.98 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.94 1.92 0.92 0.95 5.93 0.97 0.92 0.97 0.92 0.97 0.93 0.98 0.93 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.99 0.90 0.99 0.90 0.90 0.90 0.90			0.7		4.0	0.	2
1.00 1.00 1.00 1.00 1.00 0.98 0.96 1.00 3433 3492 0.95 1.00 3433 3492 0.95 1.00 3433 3492 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1% 1% 2% 1 % 2% 1 % 2% 1 % 2% 1 % 2 % 1		0 1:00	0.95		1.00	0.95	1.00
100 0.98 0.98 1.00 0.98 0.98 1.00 0.98 1.00 0.98 1.00 0.98 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0			1.00		1.00	1.00	1.00
1.00 0.98 1.00 0.98 1.00 3.433 3.492 1.00 3.433 3.492 1.00 8 0.92 4.51 492 0.92 4.51 492 0.92 5.5 2% 1% 2% 0 0 2 0 0 0 2 0 Proft NA pri		0 1.00	1.00		1.00	1.00	9.
0.95 1.00 3433 3492 0.95 1.00 3433 3492 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.92 0.02 0.93 0.02 0.93 0.02 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0.03 0.93 0	l `		0.98		1.00	1.00	0.85
3433 3492 3433 3492 3433 3492 092 092 092 451 446 54 0 8 0 8 0 7 451 492 0 5 5 5 7 7 4 Prof NA Prof		0 0.95	1.00		0.95	1.00	1.00
0.95 1.00 0.05 1.00 0.00 0.00 0.00 0.00 0.0			3507		1787	3574	1599
3433 3492 0.92 0.92 0.92 (0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	1.00 1.00	0 0.34	1.00		0.22	1.00	1.00
0.92 0.92 0.92 (4) (4) (4) (4) (4) (4) (4) (4) (4) (4)	3546 1572	2 648	3507		408	3574	1599
451 446 54 0 8 0 0 8 0 8 0 5 5 2% 1% 2% 0 2 0 Prof NA pn 7 4 pn 192 39.1	0.92 0.92	2 0.92	0.92	0.92	0.92	0.92	0.92
) 0 8 0 451 492 0 5 7 1% 2% 0 2 0 Prot NA pn 192 39.1			929	82	261	647	408
) 451 492 0 5 8 1% 2% 2% 1% 2% 0 2 0 Prot NA pn 7 4 pn 192 39.1	0 134	0	0	0	0	0	271
2% 1% 2% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	96 609	1 71	649	0	261	647	137
2% 1% 2% 0 2 0 Prof NA pm 7 4 4 192 39.1 4							
0 2 0 Prot NA pr 7 4 192 39.1	1% 1%	%0 %	1%	1%	1%	1%	7%
Prot NA pr 7 4 19.2 39.1 19.2 39.1	4	0 0	0	0	0	0	
7 4 19.2 39.1 19.2 39.1	NA Perm	n pm+pt	M		pm+pt	NA	Perm
19.2 39.1 19.2 39.1	8	2	2		-	9	
19.2 39.1 19.2 39.1					9		
s) 19.2 39.1			34.0		49.9	40.2	40.2
			34.0		49.9	40.2	40.2
Actuated g/C Ratio 0.16 0.33 0.38	0.27 0.27	0	0.28		0.42	0.34	0.3
4.0 7.0			7.0		4.0	7.0	7.0
s) 3.0 5.0			2.0		3.0	2.0	5.0
(vph) 549 1137	972 430		993		306	1197	232
\sqrt{s Ratio Prot} c0.13 0.14 0.05	0.17		0.18		80.09	0.18	
Perm	٥				c0.27		0.0
0.82 0.43			0.65		0.85	0.54	0.26
48.7 31.7			37.8		26.0	32.4	29.0
1.00 1.00		_	1.00		1.48	0.48	0.17
ital Delay, d2 9.6 0.6			3.3		15.3	1.3	0.8
58.3 32.3 24	44	1 28.6	41.2		53.8	16.7	5.9
ш		0	□		□	ш	
Approach Delay (s) 44.6	36.2		39.9			20.7	
Approach LOS D	۵		Ω			O	
Intersection Summary							
HCM 2000 Control Delay 34.0 HC	HCM 2000 Level of Service	of Service		ပ			
120.0	Sum of lost time (s)	s)		22.0			
	ICU Level of Service	ise		□			
15							

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HCM Unsignalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Existing PM	Upper Kerr Village (8124-01)	
M Unsignalized Intersection Capacity Analysis	st. Augustine Drive & Speers Road	

FEI		•	†	*	>	ļ	1	•	←	•	۶	→	•
10 10 10 10 10 10 10 10	Aovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
h) 10 690 25 0 970 10 0 0 25 h) 10 690 25 0 970 10 0 0 25 h) 10 690 25 0 970 10 0 0 25 h) 10 719 26 0.96 0.96 0.96 0.96 h 10 0.96 0.96 0.96 0.96 0.96 0.96 h 10 0.86	ane Configurations	r	₩			₩				¥C.		4	
h) 10 690 25 0 970 10 0 0 25 Free Free Stop	raffic Volume (veh/h)	9	069	52	0	970	9	0	0	25	2	0	10
Free Free Stop O% O% O% O% O% O% O% O	uture Volume (Veh/h)	9	069	52	0	970	10	0	0	52	2	0	9
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	ign Control		Free			Free			Stop			Stop	
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	irade		%0			%0			%0			%0	
10 719 26 0 1010 10 0 0 26 3.6 1.1	eak Hour Factor	96.0	96:0	96.0	96:0	96:0	96.0	96:0	96.0	96.0	96.0	96.0	96.0
None None 236 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.8	lourly flow rate (vph)	10	719	56	0	1010	10	0	0	56	2	0	10
3.6 None None None 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	edestrians								2			2	
None None None 236 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.8	ane Width (m)								3.6			3.6	
None None None 236 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.8	/alking Speed (m/s)								- -			[-	
None None 236 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.8	ercent Blockage								0			0	
None None 236 0.86 0.86 e 1025 750 1272 1782 378 7 e 1025 750 986 186 0.86 e 1025 750 986 1878 378 7 e 102 22 22 3.5 4.0 3.3 99 100 100 96 170 100 96 170 96 170 96 170 96 170 96 170 96 170 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 96 170 90 90 90 90 90 90 90 90 90 90 90 90 90	ight turn flare (veh)												
1025 750 1272 1782 378 1025 1025 1250 1272 1782 378 1272 1782 378 1272 1782 378 1272 1782 378 1272 1782 378 1272 1782 378 1272 1782 378 1272 1782 378 1282 128	edian type		None			None							
Column C	edian storage veh)												
e 1025 750 086 086 086 086 086 086 086 086 086 08	pstream signal (m)					236							
e 1025 750 1272 1782 378 I	K, platoon unblocked	98.0						98.0	98.0		98.0	98.0	0.86
697 750 985 1580 378 1 4.1 4.1 4.1 7.5 6.5 6.9 2.2 2 2.2 3.5 4.0 3.3 99 100 100 100 96 776 864 170 92 623 10 479 266 673 347 26 15 10 0 26 0 10 26 10 776 1700 1700 1700 623 281 0.01 0.28 0.16 0.40 0.20 0.05 m) 0.3 0.0 0.0 0.0 1.0 1.3 9.7 0.0 0.0 0.0 0.0 1.0 1.3 A A B B B B B B B B B B B B B B B B B	conflicting volume	1025			750			1272	1782	378	1426	1790	515
1	C1, stage 1 conf vol												
697 750 985 1580 378 1 2.2 2.2 2.2 3.5 4.0 3.3 99 100 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	32, stage 2 conf vol												
22 22 4.0 3.3 99 100 100 100 96 776 864 170 92 623 10 479 266 673 347 26 15 10 0 26 0 10 26 15 0 0 26 0 10 26 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Su, unblocked vol	269			750			982	1580	378	1164	1589	102
2.2 2.2 3.5 4.0 3.3 3.5 7.5 4.0 3.3 3.5 99 100 100 96 100 100 96 100 100 96 100 100 96 100 100 96 100 100 96 100 100 96 100 100 100 96 100 100 100 100 100 100 100 100 100 10	;, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
22	3, 2 stage (s)												
99 100 100 96 776 EB 1 EB 2 EB 3 WB 1 WB 2 NB 1 SB 1 10 479 266 673 347 26 15 10 0 26 0 0 0 0 0 5 776 1700 1700 1700 623 281 0.01 0.28 0.16 0.40 0.20 0.04 0.05 M) 0.3 0.0 0.0 0.0 0.0 110 18.5 A A B C B C B C B C B C B C B C B C B C	(s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
776 864 170 92 623 EB 1 EB 2 EB 3 WB 1 WB 2 NB 1 SB 1 10) dneue free %	66			100			9	100	96	96	100	66
EB1 EB2 EB3 WB1 WB2 NB1 SB1 10 479 266 673 347 26 15 0 0 0 0 0 0 0 0 0 0 776 1700 1700 1700 1700 623 281 0.01 0.28 0.16 0.40 0.20 0.04 0.05 m) 0.3 0.0 0.0 0.0 0.0 1.0 1.3 9.7 0.0 0.0 0.0 0.0 11.0 18.5 A A D D D D D D D D D D D D D D D D D	M capacity (veh/h)	9//			864			170	95	623	122	91	802
10 479 266 673 347 26 15 10 0 0 0 0 0 0 5 0 0 26 0 10 28 10 776 1700 1700 1700 1700 623 281 0.01 0.28 0.16 0.40 0.20 0.04 0.05 0.3 0.0 0.0 0.0 0.0 110 18.5 A A A 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 0 0 110 18.5 A A 0 0 0 0 0 0 0 0 0 0 110 18.5 A 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	irection, Lane #	EB 1	EB2	EB3	WB1	WB 2	NB 1	SB 1					
10 0 0 0 0 0 0 5 0 0 26 0 10 26 10 776 1700 1700 1700 623 281 0.01 0.28 0.16 0.40 0.20 0.04 0.05 m) 0.3 0.0 0.0 0.0 0.0 1.0 1.3 A 0 0 0 0 0 0 110 18.5 A 0 0 0 0 0 110 18.5 A 0 0 0 0 0 110 18.5 Y 0.4 ICU Level of Service	olume Total	10	479	566	673	347	56	15					
776 1700 1700 1700 623 281 0.01 0.02 0.10 0.00 0.00 0.00 0.00 0.00	olume Left	9	0	0	0	0	0	2					
776 1700 1700 1700 1700 623 281 0.01 0.28 0.16 0.40 0.20 0.04 0.05 0.01 0.20 0.0 0.0 1.0 1.3 9.7 0.0 0.0 0.0 1.0 11.0 18.5 A 0.0 0.0 0.0 1.0 11.0 18.5 A 0.0 0.0 0.0 1.0 18.5 A 0.0 0.0 0.0 1.0 18.5 A 0.0 0.0 0.0 1.0 18.5 B C Vilication 37.1% ICU Level of Service	olume Right	0	0	56	0	10	56	9					
m) 0.01 0.28 0.16 0.40 0.20 0.04 0.05 0.09 0.03 0.0 0.0 0.0 0.0 1.0 1.3 0.0 0.0 0.0 0.0 1.0 1.85 0.0 0.1 0.0 0.0 0.0 1.0 18.5 0.1 0.0 0.0 0.0 1.0 18.5 0.0 0.0 0.0 1.0 18.5 0.0 0.0 0.0 1.0 18.5 0.0 0.0 0.0 1.0 18.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	돐	21/	1700	1700	1700	1700	623	281					
m) 0.3 0.0 0.0 0.0 0.0 1.0 1.3 1.3 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	olume to Capacity	0.01	0.28	0.16	0.40	0.20	0.04	0.05					
9.7 0.0 0.0 0.0 11.0 18.5 A	ueue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	1.0	5.					
A B C 0.1 0.0 11.0 18.5 0.1 0.0 11.0 18.5 B C y 0.4 ICU Level of Service	ontrol Delay (s)	9.7	0.0	0.0	0.0	0.0	11.0	18.5					
9 0.1 0.0 11.0 18.5 B C y 0.4 ICU Level of Service	ane LOS	∢					ш	ပ					
y 0.4 ICU Level of Service 7.1% ICU Level of	pproach Delay (s)	0.1			0.0		11.0	18.5					
0.4 ICU Level of Service 37.1% ICU Level of Service	pproach LOS						Ф	ပ					
0.4 CU Level of Service 37.1% ICU Level of Service	Itersection Summary												
Utilization 37.1% ICU Level of Service	verage Delay			0.4									
ń	tersection Capacity Utilization	_		37.1%	0	U Level o	f Service			⋖			
	Analysis Period (min)			15									

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Existing PM Upper Kerr Village (8124-01)

*	SBR	N.W.	385	385	Perm		4	4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							reen		
•	SBL	je-	10	10	Prot	4		4		10.0	15.8			32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							Start of G		
,	WBT	4₽	1185	1185	¥	9		9		38.0	47.6		%2.09	78.4	3.7	5.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				d 6:WBT,		
Ť	EBT	‡	999	999	ΑA	2		2		38.0	47.6			95.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				:EBTL an		
\	EBL	*	225	225	pm+pt	2	2	2		0.9	12.0	17.0	12.1%	11.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None							o phase 2		linated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



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Existing PM Oueues

Queues						EXISTING PIM
6: Speers Road/Cornwall Road & Cross Avenue	rnwall F	Road &	Cross	Aven	ər	Upper Kerr Village (8124-01)
	4	†	ţ	٠	*	
Lane Group	EBE	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	234	693	1250	9	401	
v/c Ratio	0.61	0.23	0.51	90:0	0.76	
Control Delay	11.0	3.0	12.2	9.73	23.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	11.0	3.0	12.2	97.9	23.1	
Queue Length 50th (m)	9.1	15.6	71.8	2.7	12.1	
Queue Length 95th (m)	25.1	28.3	125.3	8.0	29.6	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	387	2978	2454	415	876	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	09.0	0.23	0.51	0.02	0.46	
Intersection Summary						

Synchro 11 Report Page 13 P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Existing PM Upper Kerr Village (8124-01)

Lane Configurations	*
1525 665 1185 15 225 665 1185 15 1900 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	
(s) 225 665 1185 15 15 15 16 16 16 16 16 16 16 16 16 16 16 16 16	
(s) 1225 665 1185 115 1900 1900 1900 1900 1900 6.0 6.6 6.6 6.6 6.6 6.6 6.6 6.0 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.01 1.00 1.00 1.00 1.02 1.03 1.03 1.03 1.03 1.03 1.03 1.03 1.03	
1900 1900 1900 1900 1900 1900 1900 1900	
6.0 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6	_
(a) 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	
HE 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	
1.00	
(a) 100 100 100 100 100 100 100 100 100 10	
(s) 115.5 10.0 10.0 10.0 10.0 10.0 10.0 10.	
HF 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	
(a) 100 100 100 100 100 100 100 100 100 10	
HF 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	
HF 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	
ph) 234 693 1234 16 ph) 234 693 1234 16 ph) 234 693 1234 16 ph 66 693 1250 00 pm+pt NA	
ph) 24 693 1250 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
ph) 234 693 1250 0 6% 0% 1% 0% 1 5 6 0% 1 1 0 0% 1 1155 1155 964 s) 1155 1155 964 s) 0.82 0.82 0.69 6.0 6.6 6.6 6.0 6.6 6.6 6.0 6.6 6.6 1.0 0.19 0.35 0.045 2466 0.045 2466 0.046 0.19 0.35 0.047 2.7 10.5 1.00 1.00 d2 3.1 0.2 0.8 1.00 1.00 d2 3.1 0.2 0.8 1.00 1.00 d2 3.1 0.2 0.8 Ry 11.2 A B Ry 11.2 A B Ry 10.0 Delay 17.0 Delay 17.0 Delay 17.0 Delay 140.0 Delay 140.0 Delay 140.0 Delay 140.0	
6% 7% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	
(s) 175 175 96.4 (s) 1155 1155 9	
(s) 115.5 115.5 96.4 95.4 115.5 115.5 96.4 95.4 95.4 95.4 95.4 95.4 95.4 95.4 95	
(s) 115.5 115.5 96.4 (s) 115.5 115.5 96.4 (s) 115.5 115.5 96.4 (s) 0.82 0.82 0.69 (s) 0.82 0.82 0.69 (s) 0.60 0.19 0.35 (c) 0.01 0.00 (d) 0.10 0.00 (d) 0.10 0.00 (d) 0.10 0.10 (d) 0.10	
(s) 115.5 115.5 96.4 (s) 115.5 115.5 96.4 (o) 82 0.82 0.69 (o) 83 0.82 0.69 (o) 9 0.82 0.69 (o) 0.19 0.35 (o) 0.19 0.35 (o) 0.10 0.03	4
(s) 115.5 115.5 96.4 s) 115.5 115.5 96.4 0.82 0.82 0.82 6.0.6 6.6 6.6 6.0.6 0.6 0.6 0.0.0 0.19 0.35 0.04 0.23 0.51 7.7 2.7 10.5 1.00 1.00 1.00 22 3.1 0.2 0.8 24 8 11.2 B A B Ny Ny Ny Ny No Delay 1.00 Dolly (s)	
s) 115.5 115.5 96.4 0.82 0.82 0.69 0.82 0.69 0.82 0.69 0.82 0.69 0.83 2.978 2.456 0.061 0.23 0.51 0.061 0.23 0.51 0.07 2.7 10.5 1.00 1.00 0.2 3.1 0.2 0.8 1.0 1.00 1.00 0.8 1.0 1.00 1.00 0.8 1.1.2 0.8 11.2 0.8 1.4.8 11.2 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	
0.82 0.82 0.69 0.82 0.82 0.69 0.6 0.6 0.6 0.6 0.6 0.6 0.00 0.19 0.35 0.045 0.045 0.045 0.07 2.7 10.5 1.00 1.00 0.2 0.8 1.00 1.00 0.2 0.8 1.0 1.00 0.2 0.8 1.0 1.00 0.2 0.8 1.0 1.00 0.2 0.8 1.0 1.00 0.2 0.8 1.0 1.00 0.2 0.8 1.0 1.00 0.0 1.	
8) 6,0 6,6 6,6 6,6 6,6 6,6 6,6 6,6 6,6 6,6	O
Atension (s) 3.5 5.0 5.0 Cap (vph) 381 2978 2456 Perm c0.06 0.19 0.35 Perm c0.45 1.03 0.51 Acid (s) 2.7 2.7 10.5 Acid (s) 3.7 2.7 10.6 Acid (s) 3.1 0.2 0.8 Bolay (d) 10.7 2.8 11.2 LOS A B H Delay (s) A B A Accounted (s) A B A Accounted (c) A B A Accounted (c) Accounted (c) 0.61 Accounted (c	
Cap (vph) 381 2978 2456 Prot 0.006 0.19 0.35 Perm 0.615 0.23 0.51 Delay, d1 77 2.7 10.5 on Factor 1.00 1.00 1.00 and Factor 1.00 1.00 1.00 LOS 3.1 0.2 0.8 Delay (s) 8 11.2 LOS 4.8 11.2 LOS 3.1 0.2 0.8 Delay (s) 8 11.2 Delay (s) 9 11.2 Delay (s)	
Prot c0.06 0.19 0.35 Perm 0.45 0.45 0.61 0.23 0.51 0.61 0.23 0.51 0.61 0.23 0.61 0.61 0.23 0.61 0.61 0.23 0.61 0.61 0.23 0.61 0.61 0.23 0.61 0.61 0.23 0.61 0.61 0.62 0.8 0.62 0.8 0.63 0.63 0.63 0.62 0.63	
Perm c0.45 Delay, d1 7.7 2.7 10.5 on Factor 1.00 1.00 1.00 Isla Delay, d2 3.1 0.2 0.8 To 2 0.8 To 2 0.8 To 2 0.8 To 3 1.2 Benvice B A B 11.2 LOS LOS O'Control Delay O'Control Delay O'Control Delay O'Control Delay O'Control Delay To 0'Control Delay T	
10 10 10 10 10 10 10 10	O
March Marc	
and Delay, d2 3.1 0.2 0.8 10.7 2.8 11.2 Bervice B A B A B A B A B A B A B A B A	
tal Delay, d2 3.1 0.2 0.8 evice B A B A B A B A B A B A B A B A B A B	
10.7 2.8 11.2 Delay (s) A B A B 11.2 LOS A B 11.2 A B 11.2 OCONTROL Delay 17.0 O Volume to Capacity ratio 0.61 Ocours (control Delay 140.0)	
4.8 11.2 A B 17.0 17.0 140.0	
4.8 11.2 A B 11.2 17.0 17.0 140.0	ш
A B 77.0 17.0 0.61 140.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	62.1
17.0 17.0 0.61 140.0	ш
17.0 ratio 0.61 140.0	
ratio 0.61 140.0	M 2000 Level of Service B
140.0	
/07 11/	m of lost time (s) 18.4
0.5.0 7.7	
5	

P.181/24(01/OPA Process\3. Analysis\01 - Synchro\EXP\M.syn BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

P.\81\2401\OPA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Existing PM Upper Kerr Village (8124-01)

Movement EBL EBR NBI NBT SBR Lane Configurations Mail 10 5 470 565 40 Fruite Volume (vehrly) 15 10 5 470 565 40 Sign Control 0% 0% 0% 0% 0% 0% Grade 0% 0% 0% 0% 0% 0% Grade 0% 0% 0% 0% 0% 0% Grade 0% 0% 0% 0% 0% 0% Alea Hour Factor 0% 0% 0% 0% 0% 0% Age Hour Floar 0%		4	>	•	←	→	*	
Marketon	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
me (verlyh) 15 10 5 470 0% 0.95 0.95 0.95 0.95 0.95 ckage 3 3 6.45 0.95 0.95 0.95 ckage 3 3 6.43 0.83 murblocked 0.87 0.83 0.83 murblocked 0.87 0.87 0.83 murblocked 0.89 0.01 0.03 murblocked 0.87 0.83 0.83 murblocked 0.89 0.01 0.03 murblocked 0.87 0.83 0.83 murblocked 0.89 0.80 0.83 0.83 murblocked 0.87 0.83 0.83 murblocked 0.89 0.80 0.83 0.83 murblocked 0.89 0.80 0.83 0.83 murblocked 0.87 0.87 0.83 murblocked 0.87 0.87 0.83 murblocked 0.89 0.80 0.80 0.83 murblocked 0.89 0.80 0.80 0.80 murblocked 0.89 0.80 0.80 murblocked 0.89 0.80 0.80 murblocked 0.89 0.80 murblocked 0.80 0.80 murblocked	Lane Configurations	>			4	2		
me (Vehh) 15 10 5 470 me (Vehh) 16 11 5 470 % actor 0.95 0.95 0.95 0.95 0.95 rate (veh) 16 11 5 495 rate (veh) 35	Traffic Volume (veh/h)	15	10	2	470	292	40	
Shop Free Free Free Chick	Future Volume (Veh/h)	15	10	2	470	265	40	
actor 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Sign Control	Stop			Free	Free		
(m) 3.6 0.95 0.95 0.95 0.95 0.95 (o.95 (o.95) 0.95 (o.	Grade	%0			%0	%0		
rate (vph) 16 11 5 495 (m) 36 ed (m/s) 1.1 36 ed (m/s) 1.1 36 ed (m/s) 1.1 86 ed (m/s) 1.1 None age veh) 1.0 I confived 1.56 651 672 I confirmed 1.56 672	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
(m) 35 ed (m/s) 1.1 ckage 3 are (veh) sage veh) gral (m) gral (m) gral (m) gral (m) gral (m) gral (m) front vol cont vo	Hourly flow rate (vph)	16	7	ა	495	595	42	
(m) 3.6 sed (ms) 1.1 sed (ms) 3.6 sed (ms) 1.1 sed (ms) 3.1 sed (ms) 3.1 sed (ms) 3.2 sed (ms) 3.2 sed (ms) 4.3 sed (ms) 6.4 sed (ms) 6	Pedestrians	32						
sed (m/s) 1.1 ckage 3 ckage 3 ckage 3 sted (veh) None age veh) 103 gral (m) 103 sep 20 confrol 895 472 497 sep 20 confrol 895 472 confrol 895 472 sep 20 conf	Lane Width (m)	3.6						
ckage 3 are (veh) age veh) ignal (m) inhocked 0.87 0.83 0.83 inhocked 0.87 0.83 0.83 ago volume 1156 651 672 conf vol 6.4 6.3 4.3 (s) 3.5 3.4 2.4 as % 94 98 99 (veh h) 261 461 783 ane # EB1 NB1 SB1 in 1 0 42 int 11 0 42 int 11 0 42 int 11 0 42 int 11 0 37 spacity 0.09 0.01 0.37 clapacity 0.09 0.01 0.37 clapscity 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Walking Speed (m/s)	[-						
are (veh) agaveh) grad (m) grad (m) grad (m) unblocked 1087 087 087 087 087 087 103 103 103 104 105 107 108 108 109 109 109 109 109 109	Percent Blockage	က						
age veh) age veh) age veh) age veh) forgal (m) fo	Right turn flare (veh)							
age veh) age veh) grad (m) grad (m) grad (m) grad (m) 0 87 0 83 0 83 0 83 0 83 0 84 651 672 1 confivol 2 conf vol 895 472 497 896 472 497 897 896 99 (veh h) 261 461 783 anne # EB 1 NB 1 SB 1 anne # A 60 637 ant 1	Median type				None	None		
grael (m) unblocked 0.87 0.83 0.83 10.83 unblocked 0.87 0.83 10.83	Median storage veh)							
unblocked 0.87 0.83 0.83 gyolume 1156 651 672 Conf vol 6.4 6.3 4.3 (s) 3.5 3.4 2.4 8 % 94 99 99 (veh/h) 261 461 783 mme# EB 1 NB 1 SB 1 11 0 42 http://display.com/spacity 0.09 0.01 0.37 spacity 0.09 0.01 0.	Upstream signal (m)				103	262		
rig volume 1156 651 672 Loonfvol 895 472 497 (s) 6.4 6.3 4.3 (s) 3.5 3.4 2.4 se % 94 98 99 (vehh) 261 461 783 sine# EB 1 NB 1 SB 1 sine# 11 0 42 Int 11 0 42 Int 11 0 0.37 sipacity 0.09 0.01 0.37 sipacity 0.09 0.01 0.37 clay (s) C A clay (s) C A clay (s) C C Summary C Summary C Summary C Summary Ind Chimic Interpretation Sipacity (s) C C Summary C Summary Interpretation 15 0.0 0.5 C Summary 16 0.5 C Summary 17 4 0.2 0.0 C Summary 18 0.5 C Summary	pX, platoon unblocked	0.87	0.83	0.83				
Confivol	vC, conflicting volume	1156	651	672				
See According See According See According	vC1, stage 1 conf vol							
ked vol 895 472 497 (s) 6.4 6.3 4.3 (s) 3.5 3.4 2.4 88% 94 98 99 (veh/h) 261 461 783 and 27 500 637 tt 16 5 0 ht 317 783 1700 capacity 0.09 0.01 0.37 ght 95th (m) 2.1 0.1 0.0 ay (s) C Summary C S Summary C Summary C	vC2, stage 2 conf vol							
(s) 6.4 6.3 4.3 4.3 ee% 94 98 99 99 99 99 99 99 99 99 99 99 99 99	vCu, unblocked vol	895	472	497				
(s) 3.5 3.4 2.4 2.4 98 98 (veh/h) 261 461 783 ane # EB 1 NB 1 SB 1 1 1 6 5 0 637 and 1 1 6 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0	tC, single (s)	6.4	6.3	4.3				
89% 94 98 99 (VehM) 261 461 783 ann # EB1 NB1 SB1 100 42 11 11 100 42 11 11 11 11 11 11 11 11 11 11 11 11 11	tC, 2 stage (s)							
week, 94 98 99 99 99 99 99 99 99 99 99 99 99 99	IF (s)	3.5	3.4	2.4				
(veh.h) 261 461 783 and # EB1 NB1 SB1 all 27 500 637 th 11 0 42 th 317 783 1700 capacity 0.09 0.01 0.37 capacity 0.00 0.01 0.37 capacity 0.00 0.00 C A C A C Summary	p0 queue free %	8	86	66				
ane # EB1 NB1 SB1 27 500 637 11 16 5 0 11 17 83 1700 29 20 0.0 0.0 0.0 317 783 1700 317 783 1700 317 783 1700 317 783 1700 317 783 1700 317 783 1700 317 78 1700 317 78 1700 317 78 174 0.0 A elay (s) C A C A C A C A C A C A C A C A	cM capacity (veh/h)	261	461	783				
al 27 500 637 tt 16 5 0 ht 11 0 42 17 783 1700 29 0.01 0.37 317 783 1700 317 783 1700 317 783 1700 317 783 1700 32 1 0.1 0.0 34(s) 2.1 0.1 0.0 50 0.0 0.0 C A A C A A Summary C Summary C C A C C A C C A C C A C C A C C C Summary C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C C	Direction, Lane #	EB 1	NB 1	SB 1				
tit 11 5 0 42 Int 11 0 42 317 783 1700 Sapacity 0.09 0.01 0.37 Jth 95th (m) 2.1 0.1 0.0 sy (s) C 0 0.0 Summary 0.5 Capacity Utilization 42.4%	Volume Total	27	200	637				
ht 11 0 42 317 783 1700 39 50 0.01 0.37 318 55th (m) 2.1 0.1 0.0 39 (s) C A 618 (s) C A 618 (s) C C 62 C 63 C 64 (s) C C 65 C 65 C 66 C 67 (s) C 68	Volume Left	16	2	0				
317 783 1700 3-pacity 0.09 0.01 0.37 3y(s) C A 6ley(s) 174 0.2 0.0 C A OS C Summary 0.5 C-5 C-5 C-5 C-5 C-5 C-5 C-5 C-5 C-5 C-	Volume Right	Ξ	0	45				
ignacity 0.09 0.01 0.37 (a) (a) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	SH	317	783	1700				
yth 95th (m) 2.1 0.1 0.0 sy (s) C.2 0.0 C. C. 0.0 OS C. 0.0 Summary 0.5 Capacity Utilization 42.4%	Volume to Capacity	0.09	0.01	0.37				
ay (s) 17.4 0.2 0.0 C A C C C C C C C C C C C C C C C C C C	Queue Length 95th (m)	2.1	0.1	0.0				
clay (s) 17.4 0.2 0.0 OS C Summary 0.5 Isy 0.5 Copacity Utilization 42.4% Code (min) 15	Control Delay (s)	17.4	0.2	0.0				
any C. 0.0 O.5	Lane LOS	O	∢					
C mmary 0.5 pacity Utilization 42.4% (fmin) 15.	Approach Delay (s)	17.4	0.2	0.0				
0.5 42.4% 15	Approach LOS	O						
0.5 42.4% 15	Intersection Summary							
42.4%	Average Delay			0.5				
	Intersection Capacity Utilizatio	u.		42.4%	⊴	U Level o	Service	A
	Analysis Period (min)			15				

Existing PM Upper Kerr Village (8124-01) Timings 9: Kerr Street & Stewart Street

→	SBT	4	455	455	NA	9		9		24.0	32.0	45.0	%O:	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	35						
۶	SBL		22	22	pm+pt	_	9	-			10.0								Lead					0.0	_									
—	NBT		320		AN			2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		9	10	Perm		2	2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				of Green		
ţ	WBT	4	15	15	Ϋ́	∞		80		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				TL, Start		
-	WBL		9	10	Perm		∞	∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	70				and 6:SB		
†	EBT	4	9	10	Ν	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				2:NBTL		
1	EBL		20	20	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				ed to phase		ırdınated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control I ype: Actuated-Coordinated

Splits and Phases: 9: Kerr Street & Stewart Street



P.\81\2401\0PA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\EXP\M.syn BA Group - EFS

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J. Itali Gilect & Otewalt Gilect					/
	†	ţ	-	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	28	109	407	609	
v/c Ratio	0.29	0.29	0.31	0.51	
Control Delay	21.6	10.0	9.7	10.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	9.7	10.1	
Queue Length 50th (m)	8.5	3.4	16.3	29.2	
Queue Length 95th (m)	16.5	13.0	48.7	88.7	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	44	552	1295	1192	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.31	0.51	

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

P.(81)24(01)OPA Process\3. Analysis\01 - Synchro\EXPM.syn BA Group - EFS

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Timings 10: Dorval Road & Wyecroft Road

Existing PM Upper Kerr Village (8124-01)

	1	†	-	↓	4	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations	K	+ 13	K	*	¥.	*	4413	F	4413	
Traffic Volume (vph)	382	215	09	06	470	95	1160	105	982	
Future Volume (vph)	382	215	9	90	470	92	1160	105	982	
Turn Type	Prot	ΑΝ	pm+pt	ΑN	Perm	pm+pt	₹	Prot	Ν	
Protected Phases	7	4	က	∞		2	2	~	9	
Permitted Phases			∞		∞	2				
Detector Phase	7	4	က	∞	∞	2	2	-	9	
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	10.0	7.0	20.0	7.0	20.0	
Minimum Split (s)	12.0	25.0	12.0	25.0	25.0	12.0	41.0	12.0	41.0	
Total Split (s)	21.0	40.0	21.0	40.0	40.0	17.0	42.0	17.0	42.0	
Total Split (%)	17.5%	33.3%	17.5%	33.3%	33.3%	14.2%	35.0%	14.2%	35.0%	
Maximum Green (s)	16.0	33.0	16.0	33.0	33.0	12.0	35.0	12.0	35.0	
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	3.0	
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)	2.0	7.0	2.0	7.0	7.0	2.0	7.0	2.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	C-Min	None	Q-Min	
Walk Time (s)		7.0		7.0	7.0		7.0		7.0	
Flash Dont Walk (s)		11.0		11.0	11.0		27.0		27.0	
Pedestrian Calls (#/hr)		0		0	0		0		0	
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120		į								
Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBT, Start of Green Natural Ovele: 90	sed to phas	e Z:NBTL	and 6:5	81, Start o	of Green					
Control Type: Actuated-Coordinated	ordinated									
Splits and Phases: 10: Do	10: Dorval Road & Wyecroft Road	& Wyecro	off Road							
V _{Ø1} + V _{Ø2}	Ø2 (R)				₹03	3		†Ø		
42 s					21s		4	s o		
1 T	(4)				1			4		
60	(K)				6		-	± 108		

P.181124101/OPA Process\3. Analysis\01 - SynchrolEXPM.syn BA Group - EFS

Queues 10: Dorval Road & Wyecroft Road

Existing PM Upper Kerr Village (8124-01) 39.4 0.0 39.4 0.0 39.4 101.0 672.1 1682 0.42 57.1 0.0 57.1 13.4 350 0.33 1304 0.77 33.2 0.0 33.2 104.8 494.4 103 103 0.51 25.7 25.7 12.8 m19.6 65.0 0.43 511 513 0.0 51.3 71.4 #132.8 288 98 0.23 36.4 0.0 36.4 17.8 31.8 474 0 0 0 0.21 65 65 0.18 20.1 20.1 8.3 16.3 145.0 435 0.36 18.1 0.0 18.1 22.4 36.9 155.6 0.36 1206 418 0.92 77.2 0.0 77.2 51.2 #82.7 115.0 456 ve Ratio
Control Delay
Queue Delay
Queue Bength 50th (m)
Queue Length 56th (m)
Queue Length 95th (m)
Inhamal Link Dist (m)
Base Capacity (vph)
Base Capacity (vph)
Starvation Cap Reductn
Spillack Cap Reductn
Storage Cap Reductn
Reduced vic Ratio Lane Group Flow (vph)

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Existing PM Upper Kerr Village (8124-01)

Management EBI EBI EBI NBI		1	†	<i>></i>	>	ţ	4	•	←	•	۶	→	•
Name	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900 1900	Lane Configurations	*	₩		<i>y</i> -	*	*	*	444		F	4413	
ph) 385 215 165 60 90 470 95 146 40 105 985 ph) 385 215 166 190 1900 1	Traffic Volume (vph)	382	215	185	09	06	470	92	1160	40	105	982	210
100 1900 1	Future Volume (vph)	382	212	185	09	06	470	92	1160	40	105	982	210
100 500 70 500 70 500 70 70	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 0.99 1.00	lotal Lost time (s)	5.0	0.7		9.0	0.7	0.7	2.0	0.7		2.0	0.7	
1,00	Lane Util. Factor	0.97	0.95		1.00	1.00	1.00	1.00	0.91		0.97	0.91	
1,00	Frpb, ped/bikes	9.5	0.99		0.1	00.1	0.99	00.1	1.00		1.00	9.5	
(ph) 0.95 1.00 0	ripo, peu/bikes Fri	8.0	0.93		00.1	8 6	0.85	00.0	0.0		8.0	0.97	
3213 3217 1783 1727 1577 1786 5038 3502 4947 3213 3217 3217 321 1727 1577 185 5038 3502 4947 3213 3217 321 3217 1577 185 5038 3502 4947 418 234 201 65 98 511 103 1261 43 114 1071 418 234 201 65 98 511 103 1261 43 114 1071 418 315 0 0 0 0 159 0 0 0 0 0 418 315 0 0 0 0 159 0 0 0 0 0 418 315 0 0 0 0 159 0 0 0 0 0 418 315 0 0 0 0 0 159 0 0 0 0 418 315 0 0 0 0 0 159 0 0 0 0 418 315 0 0 0 0 0 0 0 0 0	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
10 10 10 10 10 10 10 10	Satd. Flow (prot)	3213	3217		1783	1727	1577	1736	5038		3502	4947	
PHF 3213 3217 337 1727 1577 185 5038 3502 4947 418 214 214 21 0 0 0 0 159 0 0 0 0 0 0 0 0 0	Flt Permitted	0.95	1.00		0.50	1.00	1.00	0.10	1.00		0.95	1.00	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	3213	3217		937	1727	1577	185	5038		3502	4947	
11	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1	Adj. Flow (vph)	418	234	201	92	98	211	103	1261	43	114	1071	228
14 315 0 65 98 352 103 1301 0 114 1273 1	RTOR Reduction (vph)	0	120	0	0	0	159	0	က	0	0	56	0
9% 4% 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Lane Group Flow (vph)	418	315	0	65	98	352	103	1301	0	114	1273	0
9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1% 0 2 0	Confl. Peds. (#/hr)	_		4	4		-	_		_	_		
National Prof. Nati	Heavy Vehides (%)	%6	4%	5%	1%	10%	%	4%	5%	5%	%0	1%	2%
Prof. NA pm+pt NA Perm pm+pt NA Prof. 7	Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
7 4 3 8 5 2 1 17.0 40.5 37.1 30.3 30.3 48.9 39.4 9.3 3 17.0 40.5 37.1 30.3 30.3 48.9 39.4 9.3 3 17.0 40.5 37.1 30.3 30.3 48.9 39.4 9.3 3 6.14 0.34 0.31 0.25 0.26 0.41 0.33 0.08 0.09	Turn Type	Prot	ΑĀ		pm+pt	¥	Perm	pm+pt	¥		Prot	Α	
17.0	Protected Phases	7	4		က	00	,	2	2		_	9	
17.0	Permitted Phases				∞		∞	2					
17.0 40.5 37.1 30.3 30.3 48.9 39.4 9.3 3.9 17.0 40.5 37.1 30.3 30.3 48.9 39.4 9.3 3.9 17.0 40.5 0.34 0.25 0.44 0.33 0.26 0.41 0.33 17.0 40.5 0.3 0.2 0.40 0.2 0.0 17.0 5.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 17.0 0.0 0.0 0.0 17.0 0.0 0.0	Actuated Green, G (s)	17.0	40.5		37.1	30.3	30.3	48.9	39.4		9.3	39.2	
0.14 0.34 0.31 0.25 0.41 0.33 0.08 0.08 0.08 0.08 0.08 0.08 0.08	Effective Green, g (s)	17.0	40.5		37.1	30.3	30.3	48.9	39.4		 	39.2	
5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 4.5 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Kato	0.14	0.34		0.31	0.25	0.25	0.41	0.33		0.08	0.33	
455 100	Clearance Time (s)	2.0	7.0		2.0	0.7	7.0	2.0	2.0		2.0	2.0	
455 1085 337 436 398 198 1654 271 60.13 0.10 0.01 0.06 6.004 6026 0.03 0.02 0.29 0.19 0.22 0.88 0.52 0.79 1.00 1.00 1.00 1.00 1.00 0.84 1.00 1.01 1.00 1.00 1.00 0.84 1.00 1.02 23.4 0.1 0.3 3.2 0.1 16 2.6 3.2 E C D E C D E C D Sun of lost time (s) 1.00 1.00 Sun of lost time (s) P HOM 2000 Level of Service B HOM 2000 Level of Service Capacity ratio 0.82 0.00 cervice E C D A429 HCM 2000 Level of Service D Capacity ratio 0.82 0.00 cervice E C C D A450 HCM 2000 Level of Service D Capacity ratio 0.82 0.00 cervice E C C D A450 HCM 2000 Level of Service E C C D	Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
C0.13 0.10 0.01 0.06 c.004 c.026 0.03 C.003 C.003 C.002 0.17 0.05 c.022 0.17 0.05 C.002 0.17 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Lane Grp Cap (vph)	422	1085		337	436	398	198	1654		271	1616	
0.92 0.29 0.05 0.05 0.079 0.042 0.077 0.042 0.078 0.022 0.079 0.042 0.079 0.020 0.079 0.042 0.079 0.020 0.082 0.079 0.042 0.082 0.079 0.042 0.098 0.042 0.079 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.098 0.042 0.04	v/s Ratio Prot	c0.13	0.10		0.01	90.0		c0.04	c0.26		0.03	0.26	
0.92 0.29 0.19 0.22 0.88 0.52 0.79 0.42 0.79 0.22 0.23 0.23 0.23 0.23 0.23 0.23 0.23	v/s Ratio Perm	0	0		0.05	0	c0.22	0.17	9		9		
23.4 0.1 0.3 0.3 2.2 25.1 30.3 5.2 2.2 2.3 1.3 2.2 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2	V/c Katio	0.92	0.29		0.19	0.22	0.88	0.52	97.0		0.42	0.79	
23.4 (20) (20) (20) (20) (20) (20) (20) (20)	Uniform Delay, d I	0.00	7.67		1.87	30.0	43.2	72.	20.0		27.0	30.0	
7.2.7 29.3 30.0 35.8 63.2 26.6 33.2 53.8 4 E	Incremental Delay 40	22.4	5 -		00.0	0 0	20.00	5 4	90.0		5 -	8.0	
E C C D E C E E C C D E C E E E C C D E C E E E C C D E C E E E E	Delay (s)	74.2	20.3		30.0	35.0	63.2	26.6	33.2		53.8	40.6	
Section Sect	l evel of Service	! ш	C		C	2	Ц	C	C			_	
D E C	Approach Delay (s)	'	51.3		,	56.1	1		32.7		1	41.7	
Alay 42.9 HCM 2000 Level of Service D Capacity ratio 0.82 Sum of lost time (s) 24.0 Utilization 84.4% ICU Level of Service E 15	Approach I OS		_			ш			c			_	
May 42.9 HCM 2000 Level of Service Capacity ratio 0.82 Nm of lost time (s) h (s) 120.0 Sum of lost time (s) Utilization 84.4% ICU Level of Service 15 15	The state of the s		۵									2	
play 42.9 HCM 2000 Level of Service Capacity ratio 0.82 0.82 h (s) 120.0 Sum of lost time (s) Utilization 84.4% ICU Level of Service 15 15 P 15	mersection summary												
h (s) 120.0 Sum of lost time (s) Utilization 84.4% ICU Level of Service 15	HCM 2000 Control Delay HCM 2000 Volume to Capa	city ratio		42.9	Ĭ	OM 2000	Level of	Service		۵			
Utilization 84.4% 15	Actuated Cycle Length (s)			120.0	S	im of lost	time (s)			24.0			
ď.	Intersection Capacity Utiliza	ıtion		84.4%	೦	U Level o	of Service	0		ш			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

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^{# 95}th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

The control of the percentile queue is metered by upstream signal.

HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

	4	-	•	←	→	•		
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	j-	¥	<u>,-</u>	‡	₽₽			
Traffic Volume (veh/h)	2	8	170	335	200	125		
Future Volume (Veh/h)	2	8	170	332	200	125		
Sign Control	Stop			E E	Free			
Grade	%0			%	%			
Peak Hour Factor	0.94	9.94	0.94	0.94	0.94	0.94		
Hourly flow rate (vph)	2	82	181	356	532	133		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right tum flare (veh)								
Median type				None	None			
Median storage veh)								
Upstream signal (m)								
pX, platoon unblocked								
	1138	332	999					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	1138	332	999					
tC, single (s)	8.9	7.0	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	26	87	8					
cM capacity (veh/h)	159	099	920					
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2	
Volume Total	2	82	181	178	178	355	310	
Volume Left	2	0	181	0	0	0	0	
Volume Right	0	82	0	0	0	0	133	
cSH	159	099	920	1700	1700	1700	1700	
Volume to Capacity	0.03	0.13	0.20	0.10	0.10	0.21	0.18	
Queue Length 95th (m)	0.7	3.3	5.5	0.0	0.0	0.0	0.0	
Control Delay (s)	28.4	11.3	6.6	0.0	0.0	0.0	0.0	
Lane LOS	Ω	ш	∢					
Approach Delay (s)	12.2		3.3			0.0		
Approach LOS	В							
Intersection Summary								
Average Delay	l	l	2.2	l	l	l		
Intersection Capacity Utilization			40 6%	2	CIT I evel of Service	Service	4	
Analysis Period (min)			15					
, , , , , , , , , , , , , , , , , , , ,								

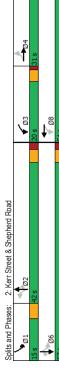
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Timings 2: Kerr Street & Shepherd Road

Future Background AM Upper Kerr Village (8124-01)

	Ø4					4				5.0	22.0	31.0	29%	27.0	3.0	1.0			Lag	Yes	3.0	3.0	0.0	0.0	None	7.0	11.0	0					
→	SBT	₩	435	435	₹	9		9		18.0	28.2	57.0	52.8%	51.8	3.3	1.9	0.0	5.2			3.5	3.0	0.0	0.0	Min	10.0	13.0	ည					
۶	SBL	<u>r</u>	06	90	pm+pt	~	9	-		7.0	11.0	15.0	13.9%	11.0	4.0	0.0	0.0	4.0	Lead	Yes	2.5	3.0	0.0	0.0	None								
•	NBR	×.	65	65	Perm		2	2		18.0	28.2	45.0	38.9%	36.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Min	10.0	13.0	2					
—	NBT	₩	280	280	Ž	2		2		18.0	28.2		ñ				0.0		Lag	Yes	3.5	3.0	0.0	0.0	Mi.	10.0	13.0	2					
Ļ	WBT	\$	0	0	Ϋ́	∞		80		2.0	22.0	51.0	47.2%	47.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0					
-	WBL	*	120	120	pm+pt	3	∞	က		2.0	0.6	20.0	18.5%	16.0	3.0	1.0	0.0	4.0	Lead	Yes	3.0	3.0	0.0	0.0	None								poor
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 108	Actuated Cycle Length: 45.7	Natural Cycle: 75	Control Type: Semi Act-Uncoord



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Future Background AM Queues 2: Kerr Str

2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
	-	↓	←	*	۶	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	132	236	308	71	66	478	
v/c Ratio	0.41	0.34	0.21	0.10	0.14	0.23	
Control Delay	22.0	1.3	10.1	5.6	4.0	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0:0	
Total Delay	22.0	1.3	10.1	5.6	4.0	4.5	
Queue Length 50th (m)	9.7	0.0	8.5	0.0	2.4	7.3	
Queue Length 95th (m)	23.9	0:0	16.4	4.3	6.9	14.4	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	602	1545	2811	1215	778	3462	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	0.15	0.11	90:0	0.13	0.14	
Intersection Summary							

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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Background AM Upper Kerr Village (8124-01)

	4	†	*	-	Ļ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	"	42		r	\$		r	‡	*	<u>, </u>	‡	*
Traffic Volume (vph)	0	0	0	120	0	215	0	280	65	90	435	0
Future Volume (vph)	0	0	0	120	0	215	0	280	92	06	435	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Lane Utill. Factor				1.00	1.00			0.95	1.00	0.0	0.95	
Frpb, ped/bikes				1.00	0.98			1.00	0.97	9.6	0.1	
Fipb, ped/bikes				30.0	0.85			00.1	0.85	3.6	8.6	
Fit Protected				0.95	1.00			1.00	1.00	0.95	1.00	
Satd. Flow (prot)				1667	1589			3497	1499	1785	3505	
Flt Permitted				0.73	1.00			1.00	1.00	0.47	1.00	
Satd. Flow (perm)				1276	1589			3497	1499	879	3505	
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91	0.92
Adj. Flow (vph)	0	0	0	132	0	236	0	308	71	66	478	0
RTOR Reduction (vph)	0	0	0	0	177	0	0	0	44	0	0	0
Lane Group Flow (vph)	0	0	0	132	29	0	0	308	27	66	478	0
Confl. Peds. (#/hr)				2		2			2	2		
Heavy Vehides (%)	5%	5%	2%	%	2%	%0	5%	7%	2%	1%	3%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	9	0	0	0	0
Turn Type	Perm			pm+pt	¥		Perm	≨	Perm	pm+pt	Α̈́	Perm
Protected Phases		4		က	∞			2		_	9	
Permitted Phases	4			∞			5		7	ဖ		9
Actuated Green, G (s)				12.6	12.6			19.4	19.4	28.7	28.7	
Effective Green, g (s)				12.6	12.6			19.4	19.4	28.7	28.7	
Actuated g/C Ratio				0.25	0.25			0.38	0.38	0.57	0.57	
Clearance Time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Vehicle Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
Lane Grp Cap (vph)				373	396			1343	575	294	1991	
v/s Ratio Prot				c0.05	0.04			0.09		0.02	00.14	
V/S Katio Perm				0.04	0 15			0.03	0.02	0.08	0.24	
Uniform Delay, d1				15.5	14.8			10.5	8.6	5.2	5.4	
Progression Factor				1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2				9.0	0.2			0.1	0.0	0.1	0.1	
Delay (s)				16.0	14.9			10.6	8.6	5.3	5.5	
Level of Service				ш	ω			ш	⋖	⋖	V	
Approach Delay (s)		0.0			15.3			10.5			5.5	
Approach LOS		⋖			ш			ш			∢	
Intersection Summary												
HCM 2000 Control Delay			9.6	Н	HCM 2000 Level of Service	evel of S	ervice		Α			
HCM 2000 Volume to Capacity ratio	y ratio		0.34									
Actuated Cycle Length (s)			50.5	S S	Sum of lost time (s)	ime (s)			17.2			
Intersection Capacity Utilization	<u></u>		26.0%	2	ICU Level of Service	Service			n			
Analysis Period (min)			2									
c Critical Lane Group												

P.181/2401/OPA Process\(\alpha\). Analysis\(\text{01}\) - Synchro\(\text{FTAM}\). Syn BA Group - EFS

Future Background AM Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	‡	*	*	‡	*	*	*	¥C.	F	*	*-
Traffic Volume (vph)	9	710	82	195	240	190	100	125	370	320	160	.8
Future Volume (vph)	40	710	82	195	240	190	100	125	370	320	160	8
Turn Type	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	Prot	₹	Perm
Protected Phases	-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			ω
Detector Phase	τ-	9	9	2	7	2	7	4	4	ო	∞	ω
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	88.3
Total Split (s)	11.0	42.0	45.0	14.0		45.0	11.0	40.0	40.0	24.0	53.0	53.0
Total Split (%)	9.5%	35.0%	35.0%	11.7%	က	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
Maximum Green (s)	8.0	36.1	36.1	11.0		39.1	8.0	33.7	33.7	21.0	46.7	46.7
Yellow Time (s)	3.0	3.7	3.7	3.0		3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0:0	2.2	2.2	0.0		2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	9.3
Lead/Lag	Lead	Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		15	15		35	35		35	35
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset 43 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	d to phase	2:WBTL	and 6:EE	JTL, Start	of Green							
Natural Cycle: 90												
Control Type: Actuated Coordinated	rdinated											

100 Splits and Phases: 3: Kerr Street & Speers Road €05 + €06(R) 45 s V Ø1

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Background AM Upper Kerr Village (8124-01)

EBT EBR WBL WBT WBR NBL NBT NBR 826 99 227 628 221 116 445 430 315 44 385 296 49 026 381 503 0.0 0.1 11.2 23.0 41.9 #98.3 14.0 45.0 14.0 45.0 14.0 45.0 14.0 45.0 14.0 45.0 14.0 45.0 14.0 45.0 16.0 0 0 0 0 0 0 0 0		1	†	*	/	Ļ	1	•	—	•	۶	→	*
47 826 99 227 628 221 116 145 430 0.13 0.72 0.18 0.75 0.45 0.30 0.28 0.28 0.23 0.91 15.2 31.5 4.4 38.5 29.6 4.9 20.6 38.1 50.3 15.2 31.5 4.4 38.5 29.6 4.9 20.6 38.1 50.3 3.6 96.7 1.6 0.0	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.13 0.72 0.18 0.75 0.45 0.30 0.28 0.33 0.91 15.2 31.5 4.4 38.5 29.6 4.9 20.6 38.1 50.3 15.2 31.5 4.4 38.5 29.6 4.9 20.6 38.1 50.3 3.6 98.7 1.5 32.3 60.7 0.0 14.7 27.0 61.3 9.7 119.0 5.6 #63.5 77.6 14.1 23.0 41.9 #88.3 105.0 38.4 1154 564 39.1 1399 739 416 517 52.2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Lane Group Flow (vph)	47	826	66	227	628	221	116	145	430	407	186	105
15.2 31.5 4.4 38.5 29.6 4.9 20.6 38.1 50.3 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	v/c Ratio	0.13	0.72	0.18	0.75	0.45	0.30	0.28	0.33	0.91	0.79	0.30	0.1
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	15.2	31.5	4.4	38.5	29.6	4.9	20.6	38.1	50.3	60.3	29.7	ίς.
15.2 31.5 44 38.5 29.6 4.9 20.6 38.1 50.3 36 98.7 11.5 32.3 60.7 0.0 14.7 27.0 61.3 9.7 119.0 5.6 #63.5 77.6 14.1 23.0 41.9 #88.3 105.0 75.0 75.0 100.0 50.0 45.0 384 50.3 51.4 41.9 41.9 41.9 41.9 105.0 75.0 75.0 75.0 75.0 105.0 0 0 0 0 0 105.0 0 0 0 0 0 105.0 0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 0 105.0 0 0 0 105.0 0 0 0 105.0 0 0 0 0 0 105.0 0 0 0 0 0 105.0 0 0 0 0 0 105.0 0 0 0 0 0 105.0 0	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0
3.6 98.7 1.5 32.3 60.7 0.0 14.7 27.0 61.3 9.7 119.0 5.6 #33.5 77.6 14.1 23.0 41.9 #98.3 105.0 105.0 14.4 100.0 5.0 41.9 #98.3 105.0 105.0 2.8 41.4 154 564 301 1399 739 416 517 522 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	15.2	31.5	4.4	38.5	29.6	4.9	20.6	38.1	50.3	60.3	29.7	5.
9.7 119.0 5.6 #63.5 77.6 14.1 23.0 41.9 #98.3 105.0 145.3 474.4 105.0 103.4 105.0 10	Queue Length 50th (m)	3.6	98.7	1.5	32.3	2.09	0.0	14.7	27.0	61.3	47.7	30.6	0.0
145.3 75.0 75.0 747.4 103.4 105.0 75.0 75.0 100.0 50.0 45.0 384 1154 564 301 1399 739 416 517 522 0	Queue Length 95th (m)	9.7	119.0	5.6	#63.5	9.77	14.1	23.0	41.9	#98.3	60.5	44.2	9.5
105.0 75.0 75.0 100.0 50.0 45.0 384 1154 564 301 1339 739 416 517 522 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		145.3			474.4			103.4			143.2	
384 1154 564 301 1399 739 416 517 522 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	384	1154	264	301	1399	739	416	217	522	583	718	652
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
0.12 0.72 0.18 0.75 0.45 0.30 0.28 0.82	Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
	Reduced v/c Ratio	0.12	0.72	0.18	0.75	0.45	0.30	0.28	0.28	0.82	0.70	0.26	0.16

Intersection Summary

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

Queue shown is maximum after two cycles.

P.(81)24(01)OPA Process\3. Analysis\01 - Synctro\FTAM\syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

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Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	44	¥C	je-	44	*	je-	+	¥C	1	+	¥C.
Traffic Volume (vph)	40	710	82	195	240	190	100	125	370	320	160	06
Future Volume (vph)	40	710	82	195	540	190	100	125	370	320	160	06
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	9.7	0.95	00.1	9.1	0.95	00.1	1.00	9.5	00.1	0.97	1.00	1.00
Frpb, ped/bikes	0.1	0.1	0.95	00.1	00.1	96.0	00.1	00.1	0.93	1.00	1.00	0.95
Flpb, ped/bikes	1.00	0.1	1.00	0.1	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00
Fr	1:00	1:00	0.85	0.1	1:00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1799	3378	1437	1687	3438	1495	1675	1844	1429	3335	1845	1511
Flt Permitted	0.38	1.00	1.00	0.17	1.00	1.00	0.64	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	727	3378	1437	298	3438	1495	1129	1844	1429	3335	1845	1511
Peak-hour factor, PHF	98.0	0.86	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	0.86
Adj. Flow (vph)	47	826	66	227	628	221	116	145	430	407	186	105
RTOR Reduction (vph)	0	0	92	0	0	132	0	0	127	0	0	20
Lane Group Flow (vph)	47	826	怒	227	628	88	116	145	303	407	186	35
Confl. Peds. (#/hr)	15		9	9		15	20		35	32		20
Heavy Vehicles (%)	%0	%9	%/	%/	2%	4%	%9	1%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	5	0	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	M	Perm
Protected Phases	-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			œ
Actuated Green, G (s)	46.8	40.9	40.9	57.1	48.2	48.2	37.0	29.1	29.1	18.6	39.8	39.8
Effective Green, g (s)	46.8	40.9	40.9	57.1	48.2	48.2	37.0	29.1	29.1	18.6	39.8	39.8
Actuated g/C Ratio	0.39	0.34	0.34	0.48	0.40	0.40	0.31	0.24	0.24	0.16	0.33	0.33
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	336	1151	489	294	1380	009	384	447	346	516	611	501
v/s Ratio Prot	0.01	0.24		0.08	0.18		0.02	0.08		c0.12	0.10	
v/s Ratio Perm	0.05		0.02	c0.28		90:0	0.07		c0.21			0.02
v/c Ratio	0.14	0.72	0.07	0.77	0.46	0.15	0.30	0.32	0.87	0.79	0.30	0.07
Uniform Delay, d1	23.0	34.5	26.7	22.4	26.3	22.8	30.8	37.4	43.7	48.8	29.8	27.4
Progression Factor	0.77	0.77	0.83	0.1	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	3.7	0.3	11.4	- ;	0.5	0.3	9.0	21.5	9.7	4.0	0.1
Delay (s)	17.8	30.2	22.4	33.8	27.4	23.4	31.2	37.9	65.2	56.4	30.2	27.5
Level of Service	മ	ပ	ပ	ပ	ပ	ပ	ပ	۵	ш	ш	ပ	ပ
Approach Delay (s)		28.8			27.9			53.8			45.1	
Approach LOS		O			O			Ω			Ω	
Intersection Summary												
HCM 2000 Control Delay			36.8	H	HCM 2000 Level of Service	Level of	Service		۵			
HCM 2000 Volume to Capacity ratio	city ratio		0.82									
Actuated Cyde Length (s)			120.0	S	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	tion		73.1%	೦	ICU Level of Service	f Service						
Analysis Period (min)			15									
c Critical Lane Group												

P.:81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

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Timings 4: Dorval Road & Speers Road

Future Background AM Upper Kerr Village (8124-01)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	1	₩	X _	<u>r</u>	₩	¥C	F	₩.	F	₩	¥c_	
Traffic Volume (vph)	415	280	40	75	382	225	20	825	255	515	255	
Future Volume (vph)	415	280	40	75	382	225	70	825	255	515	255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	₹	hm+ov	pm+pt	≨	pm+pt	ΑN	Perm	
Protected Phases	7	4		က	∞	-	2	2	Ψ-	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	-	2	2	τ-	9	ဖ	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0	13.0	45.0	12.0	11.0	45.0	12.0	46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	10.0%	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0	8.0	7.0	38.0	8.0	39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL a	nd 6:SB	r, Start	of Green							
Natural Cycle: 125												
Control Type: Actuated-Coordinated	dinated											

Splite and Dhasae.

	24		80♣	42 s	
	√ Ø3 + ₽Ø4	13 5 50 s	₹ 01	21s	
opilis arid Priases. 4. Dorval Road & opeers Road	Ø2 (R)	8	Ø6 (R)		
Spills and Priases	**************************************	12 s 45 s		11s 46s	

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Background AM Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Background AM Upper Kerr Village (8124-01)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	451	630	43	82	418	245	9/	1038	277	260	277
v/c Ratio	0.94	0.64	0.08	0.31	0.63	0.38	0.19	0.93	98.0	0.37	0.36
Control Delay	79.4	40.2	0.3	15.6	33.1	7.7	17.8	54.8	49.3	11.2	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.4	40.2	0.3	15.6	33.1	7.7	17.8	54.8	49.3	11.2	3.5
Queue Length 50th (m)	54.8	71.4	0.0	4.7	30.6	10.2	8.3	123.0	23.6	37.8	11.7
Queue Length 95th (m)	#85.1	79.0	0.0	8.3	40.3	26.3	19.6	#163.8	#128.3	47.1	17.9
Internal Link Dist (m)		412.3			472.1			621.6		494.4	
Turn Bay Length (m)	0.09		0.09	85.0		22.0	0.07		110.0		
Base Capacity (vph)	481	1192	009	275	949	639	396	1111	323	1506	762
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.53	0.07	0.30	0.44	0.38	0.19	0.93	0.86	0.37	0.36
C											
Intersection Summary											

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

Movement Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphol)		ER .	במצ	×	×		2		2	0	H	П
Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vohol)	ķ.		ľ			WBK	NBL	<u> </u>	NBK	SBL	200	SBR
Future Volume (vph)	415	- 682	L 0	72	385	205	- C	# 15 805	130	755	₹ 12 12 13	
Ideal Flow (vohol)	415	280	40	75	382	225	202	825	130	255	515	255
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
£	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1785	3476		1687	3539	1417
Flt Permitted	0.95	1.00	1.00	0.38	1.00	1.00	0.44	1.00		0.10	1.00	9.
Satd. Flow (perm)	3400	3329	1482	629	3256	1494	831	3476		172	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	630	43	82	418	245	9/	897	141	277	260	27.
RTOR Reduction (vph)	0	0	30	0	0	69	0	9	0	0	0	163
Lane Group Flow (vph)	451	630	13	82	418	176	9/	1028	0	27.7	260	114
Confl. Peds. (#/hr)	2					2	2					
Heavy Vehides (%)	3%	%8	%6	%6	10%	7%	1%	2%	%0	%2	2%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	
Turn Type	Prot	NA	Perm	pm+pt	₹	vo+mq	pm+pt	¥		pm+pt	A	Perm
Protected Phases	7	4		က	∞	_	5	2		-	9	
Permitted Phases			4	∞		∞	2			9		
Actuated Green, G (s)	17.0	35.3	35.3	32.3	25.3	43.8	43.4	37.2		29.7	49.5	49.5
Effective Green, g (s)	17.0	35.3	35.3	32.3	25.3	43.8	43.4	37.2		29.7	49.5	49.5
Actuated g/C Ratio	0.14	0.29	0.29	0.27	0.21	0.36	0.36	0.31		0.50	0.41	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	2.0	4.0	4.0	2.0		4.0	2.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	481	626	435	235	989	542	349	1077		319	1459	584
v/s Ratio Prot	c0.13	c0.19		0.02	0.13	0.05	0.01	c0.30		0.13	0.16	٩
v/s Ratio Perm			0.01	0.07		0.07	0.07			0.30	0	0.08
v/c Ratio	0.94	0.64	0.03	0.35	0.61	0.32	0.22	0.95		0.87	0.38	0.20
Unitorm Delay, d1	51.0	30.9	30.1	33.7	42.9	27.4	25.5	40.6		33.9	24.6	22.5
Progression racion	9.0	0.0	0.0	0.0	2.0	0.40	0.0	00.1		17.0	4.0	0.0
Delay (s)	76.9	38.9	30.2	20.8	31.1	12.9	25.9	59.0		48.4	10.8	16.7
Level of Service	ш	۵	O	O	O	ш	O	ш		۵	ш	
Approach Delay (s)		53.8			24.0			299			21.6	
Approach LOS		Ω			ပ			ш			O	
Intersection Summary												
HCM 2000 Control Delay			40.4	İ	CM 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	ity ratio		0.87									
Actuated Cycle Length (s)			120.0	Ō	um of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	ou		84.7%	2	U Level	ICU Level of Service	a)		ш			
Analysis Period (min)			15									

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Timings Future Background AM 5: St. Augustine Drive & Speers Road Upper Ker Village (8124-01)

5: St. Augustine Drive & Speers Road	ve & S	seers l	Road		۵n	Upper Kerr Village (8124-01)
	1	†	ţ	4		
Lane Group	EBL	BH	WBT	NBR	98	
Lane Configurations	*	₩.	₩.	*		
Traffic Volume (vph)	S.	820	720	50		
Future Volume (vph)	2	820	720	20		
Turn Type	Perm	Ä	Ϋ́	Perm		
Protected Phases		4	∞		9	
Permitted Phases	4			2		
Detector Phase	4	4	∞	2		
Switch Phase						
Minimum Initial (s)	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	
Total Split (s)	82.0	82.0	82.0	38.0	38.0	
Total Split (%)	%8.3%	%8.3%	%8.3%	31.7%	32%	
Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	6.5	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.9	6.3		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	C-Min	C-Min	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	d to phase	4:EBTL	and 8:WB	T, Start of	Green	
Natural Cycle: 50	lo cho cilos					
Control Type: Actuated-Coordinated	Idliateu					





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Queues	5: St. Augustine Drive & Speers Road

Future Background AM Upper Kerr Village (8124-01)

4	NBR	23	0.11	1.1	0.0	1.1	0.0	0.0			519	0	0	0	0.04		signal.
ļ	WBT NE	835	0.27 0.	4.7	0.0	4.7	45.6	52.3	42.5		3122 5	0	0	0	0.27 0.		by upstream
†	EBT	983	0.31	1.4	0.0	1.4	13.6	m20.4	472.1		3124	0	0	0	0.31		is metered
1	EBF	9	0.01	1.6	0.0	1.6	0.1	m0.3		20.0	283	0	0	0	0.01		entile queue
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	m Volume for 95th percentile queue is metered by upstream signal

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HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

	4	†	>	\	Į.	4	•	—	*	٠	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>, -</u>	₩			₩				¥	r-	æ	
Traffic Volume (vph)	2	820	15	0	720	15	0	0	20	0	0	0
Future Volume (vph)	2	820	ठ	0	720	5	0	0	50	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9			5.9				6.3			
Lane Util. Factor	0.1	0.95			0.95				1.00			
Frpb, ped/bikes	1.00	9.			9.				1.00			
Flpb, ped/bikes	0.99	0.1			0.0				1.00			
FT	9.0	1.00			90.1				0.86			
Flt Protected	0.95	1.00			1.00				1.00			
Satd. Flow (prot)	1796	3430			3425				1565			
FIt Permitted	0.34	1.00			1.00				1.00			
Satd. Flow (perm)	638	3430			3425				1565			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	9	996	17	0	818	17	0	0	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	22	0	0	0
Lane Group Flow (vph)	9	983	0	0	835	0	0	0	-	0	0	0
Confl. Peds. (#/hr)	S		2	2		2						
Heavy Vehicles (%)	%0	2%	%0	%0	2%	2%	%0	%0	2%	%0	%0	%0
Turn Type	Perm	AN			Ν				Perm	Perm		
Protected Phases		4			∞						9	
Permitted Phases	4								2	9		
Actuated Green, G (s)	104.5	104.5			104.5				3.3			
Effective Green, g (s)	104.5	104.5			104.5				3.3			
Actuated g/C Ratio	0.87	0.87			0.87				0.03			
Clearance Time (s)	5.9	5.9			5.9				6.3			
Vehicle Extension (s)	3.0	3.0			3.0				3.0			
Lane Grp Cap (vph)	222	2986			2982				43			
v/s Ratio Prot		c0.29			0.24							
v/s Ratio Perm	0.01								00.00			
v/c Ratio	0.01	0.33			0.28				0.01			
Uniform Delay, d1	1.0	1.4			1.3				26.8			
Progression Factor	1.19	96:0			3.76				1.00			
Incremental Delay, d2	0.0	0.2			0.2				0.1			
Delay (s)	1.2	1.6			5.2				56.9			
Level of Service	∢	4			∢				ш			
Approach Delay (s)		1.6			5.2			56.9			0.0	
Approach LOS		⋖			V			ш			∢	
Intersection Summary												
HCM 2000 Control Delay			3.9	H	HCM 2000 Level of Service	evel of S	ervice		⋖			
HCM 2000 Volume to Capacity ratio	y ratio		0.32									
Actuated Cycle Length (s)			120.0	Sul	Sum of lost time (s)	ime (s)			12.2			
Intersection Capacity Utilization	Ę		38.3%	ਹ	ICU Level of Service	Service			⋖			
Analysis Period (min)			15									
Critical Land Grain												

Critical Lane Group

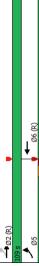
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Timings
6: Speers Road/Cornwall Road & Cross Avenue Upper Kerr Village (8124-01)

•	SBR	K.K.	245	245	Perm		4	4		10.0	15.8	31.0	22.1%	25.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							Green		
۶	SBL	je-	2	2	Prot	4		4		10.0	15.8	31.0	22.1%	25.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							r, Start of		
Ļ	WBT	₹	610	610	ΑN	9		9		38.0	47.6	74.0	52.9%	67.4	3.7	5.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				nd 6:WB		
Ť	EBT	‡	1220	1220	ΑN	2		2		38.0	47.6	109.0	%6.77	102.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				2:EBTL a		
1	EBL	<i>y</i> -	202	202	pm+pt	2	2	2		0.9	12.0	35.0	25.0%	29.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None							to phase		Jinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



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Future Background AM Queues 6: Speers

Queues					Fut	Future Background AM
6: Speers Road/Cornwall Road & Cross Avenue	nwall R	oad &	Cross	Aven		Upper Kerr Village (8124-01)
	•		ţ	ار	1	
	\	t		k.	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1435	742	9	288	
v/c Ratio	0.42	0.49	0.30	0.05	0.63	
Control Delay	4.4	3.9	7.3	9.09	12.9	
Queue Delay	0.0	0.0	0:0	0.0	0.0	
Total Delay	4.4	3.9	7.3	9.09	12.9	
Queue Length 50th (m)	9.4	44.7	33.4	1.6	0.0	
Queue Length 95th (m)	14.5	53.4	43.6	2.7	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	725	2905	2501	324	705	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.49	0.30	0.02	0.41	
Intersection Summary						

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HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Background AM Upper Kerr Village (8124-01)

																																						В		18.4	O	
*	SBR	K K	245	245	1900	5.8	0.88	1.00	1.00	0.85	1.00	2608	1.00	2002	0.85	280	21		%6	Perm		4	10.4	10.4	0.07	5.8	3.0	22	c0.01	0.11	60.5	1.00	60.7	ш				HCM 2000 Level of Service		time (s)	f Service	
<i>≯</i>	WBR SBL		20 5		1900 1900	5.8	1.00	1.00	1.00	1.00	0.95	1805	1905		0.85 0.85		9	2	2% 0%	Prot	4		10.4	10.4	0.07	. c	3.0	000		0.04	60.2	1.00	60.1	ш	60.7	ш		HCM 2000 I		Sum of lost time (s)	ICU Level of Service	
ţ	WBT	₩	610			9.9	0.95	1.00	1.00	1.00	1.00	3450	1.00			2 7	741		4%	NA	9		101.5	101.5	0.72	9.0	2501	0.21		0.30	6.7	1.00	0.0	2 4	7.0	∢		10.8	0.49	140.0	69.2%	15
†	EBT	‡	1220	1220	1900	9.9	0.95	1.00	1.00	1.00	1.00	3471	1.00	140	0.85	433	1435		4%	NA	2		117.2	117.2	0.84	9.9	2005	c0.41		0.49	3.2	1.00	0.0 80 80 80 80 80 80 80 80 80 80 80 80 80	2. A	3.7	A						
1	EB	*	205	202	1900	0.9	1.00	1.00	1:00	1.00	0.95	1686	0.34	CSC	0.85	147	241	5	4%	pm+pt	2	2	117.2	117.2	0.84	0.9	573	0.03	0.32	0.42	2.7	1.00	9.0	8					spacity ratio		lization	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Ŧ	Fit Protected	Satd. Flow (prot)	Fit Permitted	Satu. Flow (petiti)	Peak-hour factor, PHF	Adj. Flow (vpn)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	Heavy Vehides (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Venicle Extension (s)	V/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, 02 Delay (s)	l evel of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)

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HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

→ <i>→ →</i>	SBL SBT SBR	4	40 385 5	385	Free	%0	0.84 0.84 0.84	48 458 6						None		127	0.87	691			57.1	4.2	2.3	94	828													
4	NBR		വ	2				9									_																					
←	- NBT	4	5 550	2 220	Free		_	9 655						None		238	_					m	_															
1	WBR NBI		40				0.84 0.84	48 6									0.87 0.84				568 290		3.4 2.3		430 995													
↓	WBT M	4	0	0	Stop				8	3.6	[:	က					0.91					6.5	4.0		219													
\	WBL		2	2			0.84	9									0.91	1263			920	7.1	3.5	6	204	SB 1	512	48	9	828	90.0	4: 4	o: -	₹ 4	2			9
<i>></i>	EBR			22			0.0	9									0.84				586		3.6		220	NB1	. 667	9		995		0.1		4 C			1.6	707
†	L EBT	4	5		Stop			0 9	15	3.6	1.	_					1 0.91				0 933		5 4.0		8 219	1 WB1		9 9		1 383		1 3.7		150				
•	Aovement EBL	ane Configurations	raffic Volume (veh/h) 5	Future Volume (Veh/h) 5	Sign Control		9.0	Hourly flow rate (vph) 6	Pedestrians	ane Width (m)	Valking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)		X, platoon unblocked 0.91		C1, stage 1 conf vol	0	Cu, unblocked vol 950	C, single (s) 7.1	E(s) 3.5	% eane tree	cM capacity (veh/h) 178	Direction, Lane # EB 1		/olume Left 6	ne Right			Queue Length 95th (m) 1.1	ay (s)	Lane LOS		ntersection Summary	Average Delay	

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Background AM Upper Kerr Village (8124-01)

		•	-	-			
Movement	EBF	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	>			4	2,		
Traffic Volume (veh/h)	50	10	2	530	355	30	
Future Volume (Veh/h)	20	10	2	230	322	30	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly flow rate (vph)	24	12	9	624	418	35	
Pedestrians	20			2			
Lane Width (m)	3.6			3.6			
Walking Speed (m/s)	7:			1.			
Percent Blockage	2			0			
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	0.89	0.92	0.92				
vC, conflicting volume	1092	460	473				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	833	367	380				
tC, single (s)	6.4	6.2	4.1				
tC, 2 stage (s)							
(s) ₄	3.5	3.3	2.2				
po dueue free %	35	86	66				
cM capacity (veh/h)	297	612	1071				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	36	630	453				
Volume Left	24	9	0				
Volume Right	12	0	35				
cSH	329	1071	1700				
Volume to Capacity	0.10	0.01	0.27				
Queue Length 95th (m)	2.5	0.1	0.0				
Control Delay (s)	16.2	0.2	0.0				
Lane LOS	O	∢					
Approach Delay (s)	16.2	0.2	0.0				
Approach LOS	ပ						
Intersection Summary							
Average Delay			9.0				
Intersection Capacity Utilization	ation		43.4%	2	U Level o	ICU Level of Service	×

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Future Background AM Upper Kerr Village (8124-01) Timings 9: Kerr Street & Stewart Street

Queues 9: Kerr Street & Stewart Street

			10		_			9							~													10						
-	SBI	4	285	28	Ž	_				24.0	35.0	45.0	%0.09	39.6	Š	, '	0.	5.			4.0	3.0	<u>.</u>	0.0	S	10.0	7.	35						
۶	SBL		40	40	pm+pt	_	9	Ψ		0.9	10.0	10.0	13.3%	7.0	3.0	0.0			Lead	Yes	3.0	3.0	0.0	0.0	None									
←	NBT	4	425	425	Ϋ́	2		5		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		2	2	Perm		2	2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0:0	0.0	C-Min	10.0	14.0	32				d Green		
Ļ	WBT	4	32	32	ΑN	∞		∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				L, Start o		
>	WBL		20	20	Perm		∞	∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				nd 6:SBT		
†	EBT	4	22	22	Ϋ́	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				2:NBTL a		
1	EBL		32	32	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				d to phase	potonipa	dilated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Collifor Type: Actuated-Cool dillated

-₽ ₽ Splits and Phases: 9: Kerr Street & Stewart Street **■** Ø2 (R) 01

30 s ↓ √ 80 s ♦ Ø6 (R)

P.\81\2401\0PA Process\3. Analysis\01 - SynchroFTAM.syn BA Group - EFS

P.181/2401/OPA Process\(\alpha\). Analysis\(\text{01}\) - Synchro\(\text{FTAM}\). Syn BA Group - EFS

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				•	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	6/	152	548	434	
v/c Ratio	0.28	0.40	0.47	0.42	
Control Delay	23.8	14.2	9.7	9.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	23.8	14.2	9.7	9.1	
Queue Length 50th (m)	9.6	8.7	25.0	18.5	
Queue Length 95th (m)	15.4	16.8	62.6	48.7	
Internal Link Dist (m)	71.6	36.6	141.0	0.67	
Turn Bay Length (m)					
Base Capacity (vph)	459	229	1156	1029	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.17	0.27	0.47	0.42	
Intersection Summary					

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

## EBI EBI WBI WBI WBR NBI NBI NBR S 35		1	†	/	>	ļ	1	•	←	•	۶	→	•
figurations 44 45 24 44 24 25 20 35 70 5 425 20 35 70 5 425 20 36 70 5 425 20 36 70 5 425 20 36 70 5 425 20 30 70 5 425 20 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lime (yph) 35 25 5 20 35 70 5 425 20 Vight (yph) 130 1900	ane Configurations		4			4			÷			4	
Vigner (vpr) 35 25 5 20 35 20 425 20 A(vpr) 100 100 1900	raffic Volume (vph)	32	52	2	20	32	2	2	425	20	40	285	30
trime (s) 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	-uture Volume (vph)	8	52	2	200	88	2	2	425	50	40	282	8
tred (s) 5.4 5.4 100 100 100 100 100 100 100 100 100 10	ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
bilkes 1.00 1.00 1.00 bilkes 1.00 1.00 1.00 bilkes 1.00 1.00 1.00 bilkes 0.99 1.00 1.00 bilkes 0.99 1.00 1.00 ted 0.79 0.99 1.00 ted 0.79 0.98 0.98 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0	l otal Lost time (s)		5.4			5.4			5.4			5.4	
Delay Control Delay 1.00	Lane Util. Factor		0.1			1.00			1.00			1.00	
ted 0.99 0.92 0.09 0.09 0.09 0.09 0.09 0.09	Frpb, ped/bikes		1:00			0.97			1.00			0.99	
ted 0.99 0.92 0.99 0.99 ted 0.97 0.99 ted 0.97 0.99 0.99 0.99 0.99 0.99 0.99 0.99	Flpb, ped/bikes		0.39			1.00			1.00			1.00	
ted 6 0 97 0 0 99 100 0 90 100 0 90 100 0 90 100 0 90 100 0 90 100 0 90 100 0 90 1 1775 1775 180 0 90 1 1775 1	Fr		0.99			0.92			0.99			0.99	
ted of the control of	Fit Protected		0.97			0.99			1.00			0.99	
led (179) (1	Satd. Flow (prot)		1701			1612			1775			1727	
V (perm) 1388 1532 1769 Infector, PHF 0.82	FIt Permitted		0.79			0.94			1.00			0.90	
rfactor, PHF 082 082 082 082 082 082 082 082 082 082	Satd. Flow (perm)		1388			1532			1769			1572	
(vph) 43 86 24 43 85 6 518 24 duction (vph) 0 5 0 0 6 0 1 0 duction (vph) 0 5 0 0 0 24 0 54 0 4 0 54 0 35 <t< td=""><td>Peak-hour factor, PHF</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td><td>0.82</td></t<>	Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
duction (vph) 0 5 0 68 0 0 1 0 duction (vph) 0 74 0 0 84 0 0 54 0 0 54 0 0 54 0 0 54 0 0 54 0 0 54 0 0 54 0 0 54 0 0 54 0	۹dj. Flow (vph)	43	8	9	24	43	82	9	518	24	49	348	37
Ly Elow (vph) 0 74 0 0 84 0 547 0 List (Hrhf) 20 20 20 30 35 35 35 15 0	RTOR Reduction (vph)	0	2	0	0	89	0	0	τ-	0	0	က	0
sis (#firt) 20 20 20 35 35 bridges (#firt) 20 20 6%	Lane Group Flow (vph)	0	74	0	0	\$	0	0	247	0	0	431	0
hicles (%) 2% 7% 16% 0% 5% 4% 28% 6% 0% ages (#Inf) 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Confl. Peds. (#/hr)	20		20	20		20	೫		32	32		30
ages (#Int) 0 2 0 <th< td=""><td>Heavy Vehicles (%)</td><td>2%</td><td>%/</td><td>16%</td><td>%0</td><td>2%</td><td>4%</td><td>28%</td><td>%9</td><td>%0</td><td>2%</td><td>%9</td><td>%9</td></th<>	Heavy Vehicles (%)	2%	%/	16%	%0	2%	4%	28%	%9	%0	2%	%9	%9
Pheses Perm NA	3us Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	4	0
Prisess 4 8 8 2 2 Prisess 4 8 8 2 2 Green, G(s) 152 8 2 Green, G(s) 152 9 49.0 Green, G(s) 152 152 154 Green, G(s) 154 154 Green, G(s) 154 155 Ford (control Delay, G(s) 154 Ford (control Delay) 108 HCM 2000 Level of Service C Government Control Delay (s) 125 154 Ford (control Delay) 108 HCM 2000 Level of Service C Government Geschiy ratio G(s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 15.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 155 150 Sum of lost time (s) 13.8 Ford (control Delay) 150 Sum of lost time (s) 13.8	Turn Type	Perm	A		Perm	AA		Perm	ΑN		pm+pt	¥	
Phases 4 8 2 Phases 4 8 2 Green, G(s) 15.2 15.2 49.0 Green, g(s) 15.2 15.2 49.0 Green, g(s) 15.2 15.2 49.0 Order Ratio 0.20 0.20 0.65 9.0 Order School 281 3.10 1.15 4.0 Akansion (s) 4.0 5.4 5.4 4.0 Akansion (s) 281 3.10 1.15 4.0 Perm 0.05 c.00.05 c.0.31 4.0 Perm 0.05 c.00.05 c.0.31 4.0 Perm 0.05 c.0.05 c.0.31 4.0 Perm 0.05 c.0.05 c.0.31 4.0 Perm 0.02 0.02 0.0 0.0 0.0 Perm 0.02 0.02 0.0 0.0 0.0 0.0 0.0 0.0 Revise 0.02 0.02 <td>Protected Phases</td> <td></td> <td>4</td> <td></td> <td></td> <td>∞</td> <td></td> <td></td> <td>2</td> <td></td> <td>_</td> <td>9</td> <td></td>	Protected Phases		4			∞			2		_	9	
Green, G (s) 15.2 15.2 49.0 Green, G (s) 15.2 15.2 49.0 Green, G (s) 15.2 49.0 665 Attension (s) 5.4 5.4 5.4 6.5 Attension (s) 4.0 4.0 4.0 6.5 Cap (vpl) 281 3.10 1.155 7.0 Perm 0.05 0.005 0.031 1.155 1.155 1.155 Perm 0.05 0.05 0.07 0.07 0.07 0.07 0.07 0.07 0.07 0.07 1.00	Permitted Phases	4			∞			2			9		
Green g (s) (15.2 (15.2 49.0 Green g (s) 0.20 0.20 0.65 Time (s) 5.4 5.4 5.4 Time (s) 5.4 4.0 4.0 Atension (s) 2.81 3.10 1.55 Prot 0.05 0.05 0.27 4.0 Fort 0.26 0.27 0.47 0.47 Islay (41 2.5 2.5 2.5 6.5 on Factor 0.7 0.6 1.4 0.47 belay, 41 2.5 2.5 2.5 6.5 on Factor 0.7 0.6 1.4 0.47 belay, 41 2.5 2.5 2.5 6.5 on Factor 0.7 0.6 1.4 0.4 Delay, 42 2.5 2.5 2.5 4 0.6 LOS 0.7 0.6 0.7 0.6 1.4 LOS 0.7 0.6 0.7 A A	Actuated Green, G (s)		15.2			15.2			49.0			49.0	
QC Ratio 0.20 0.20 0.65 Fig. (s) 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 4.0	Effective Green, g (s)		15.2			15.2			49.0			49.0	
p Time (s) 5.4 5.4 5.4 5.4 xtension (s) 4.0 4.0 4.0 cap (vph) 281 310 1155 Port 0.05 0.06 0.031 Perm 0.05 0.07 0.01 Perm 0.05 0.02 0.27 0.47 Perm 0.05 0.27 0.47 0.47 Perm 0.05 0.27 0.47 0.47 Pain Summer 0.7 0.6 1.4 Delay (s) 25.9 25.9 7.9 LOS C C A Drough (s) T30 Sum of lost time (s) No Volune to Capacity ratio 66.4% ICU Level of Service Oyder Length (s) T3 A T3 Drough (min) T3 T4 C <td>Actuated g/C Ratio</td> <td></td> <td>0.20</td> <td></td> <td></td> <td>0.20</td> <td></td> <td></td> <td>0.65</td> <td></td> <td></td> <td>0.65</td> <td></td>	Actuated g/C Ratio		0.20			0.20			0.65			0.65	
ktension (s) 4.0 4.0 4.0 4.0 Cap (vph) 281 310 1155 Parm 0.05 c.0.05 c.0.31 Parm 0.28 0.27 0.47 Belay, d1 25.2 25.2 6.5 nn Fador 1.00 1.00 1.04 nn Fador 1.00 1.00 1.14 service 0.7 0.6 1.4 Delay, d2 0.7 0.6 1.4 Delay, d2 0.7 0.6 1.4 Delay, d2 0.7 0.6 1.4 LOS C C A LOS C C A LOS C C A LOS C C A Ovalency in visitation 66.4% ICU Level of Service Ovaled Linght 75.0 Sum of lost time (s) no Capacity ratio 66.4% ICU Level of Service	Clearance Time (s)		5.4			5.4			5.4			5.4	
Cap (vph) 281 310 1155 Prof. Prof. 1155 1155 Prof. 0.05 0.027 0.47 day 41 25.2 25.2 25.2 0.47 on Factor 0.7 1.00 1.00 1.00 an Eddy, 42 25.9 25.9 7.9 7.9 envice C C A A Delay (s) 25.9 25.9 7.9 7.9 LOS C C A A LOS C C A A A m Summary 10.8 HCM 2000 Level of Service 7.9 Ovaled Length (s) 75.0 Sum of lost time (s) 7.9 Ovaled Length (silization 66.4% ICU Level of Service C Ovaled Climit 15 CU Level of Service C	Vehicle Extension (s)		4.0			4.0			4.0			4.0	
Prof. 2005 C0.05 C0.31 Perm 0.05 C0.05 C0.31 Perm 0.05 C0.05 C0.31 Perm 0.26 0.27 0.47 Per 0.27 0.52 Per 0.25 0.55 0.55 Per 0.25	Lane Grp Cap (vph)		281			310			1155			1027	
Perm 0.05 0.05 0.031 0.26 0.27 0.47 0.47 0.47 0.25 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.47 0.04 1.00 <td>//s Ratio Prot</td> <td></td>	//s Ratio Prot												
10	//s Ratio Perm		0.05			c0.05			c0.31			0.27	
lelay, d1 25.2 25.2 6.5 on Factor 1.00 1.00 1.00 In Delay, d2 25.9 25.9 7.9 rervice C C C A Delay (s) 25.9 25.9 7.9 LOS C C C A on Summany Control Delay 10.8 HCM 2000 Level of Service Ovalc Lengli ratio 66.4% (CU Level of Service	//c Ratio		0.26			0.27			0.47			0.42	
100 100	Jniform Delay, d1		25.2			25.2			6.5			6.2	
In the content of t	Progression Factor		1.00			1.00			1.00			1.00	
25.9 25.9 7.9	ncremental Delay, d2		0.7			9.0			1.4			0.3	
C C C A A 25.9 25.9 7.9 7.9 C A A C C C A A C C C A A C C C C A A C C C C A A C	Delay (s)		25.9			25.9			7.9			6.5	
25.9 25.9 7.9 C C A A A A A A A A A A Blay A A Blay A Blay A Blay A B B B B B B B B B B B B B B B B B B	evel of Service		ပ			ပ			٧			⋖	
C C A A 10.8 HCM 2000 Level of Service 10.8 HCM 2000 Level of Service 10.45 (CU Level of Service 10.4% (CU Level of Service 10.8 (CU Level of Servic	Approach Delay (s)		25.9			25.9			7.9			6.5	
lay 10.8 HCM 2000 Level of Service Capacity ratio 0.45 Sum of lost time (s) (s) 75.0 Sum of lost time (s) Ultization 66.4% ICU Level of Service	Approach LOS		O			O			⋖			∢	
lay 10.8 HCM 2000 Level of Service Capacity ratio 0.45 Sum of lost time (s) 11 (s) 75.0 Sum of lost time (s) 12 (c) Level of Service 15 (c) Level of Service	Intersection Summary												
Capacity ratio 0.45 Sum of lost time (s) 15.0 Sum of lost time (s) Ultization 66.4% ICU Level of Service 15	HCM 2000 Control Delay			10.8	ľ	0002 M	evel of 9	Service		ω			
h (s) 75.0 Sum of lost time (s) Utilization 66.4% ICU Level of Service 15	HCM 2000 Volume to Capacity	v ratio		0.45	É		5	2		1			
Ulization 66.4% ICU Level of Service 15 ICU Level of Service	Actuated Cycle Length (s)			75.0	જ	im of lost	time (s)			13.8			
9	ntersection Capacity Utilization	L		%4.99	೦	U Level o	f Service			ပ			
C Critical Lane Groun	Analysis Period (min)			15									
C CHICAIL FAILS CLOUD	c Critical Lane Group												

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Timings 10: Dorval Road & Wyecroft Road

Future Background AM Upper Kerr Village (8124-01)

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	\	†	-	,		_	•	+	
ane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Configurations	£	₩	r	₩	r	443	F	4413	
raffic Volume (vph)	215	115	20	120	110	1260	145	982	
-uture Volume (vph)	215	115	20	120	110	1260	145	982	
urn Type	Prot	Ν	pm+pt	Ϋ́	pm+pt	¥	Prot	¥	
Protected Phases	7	4	က	∞	2	2	-	9	
Permitted Phases			∞		2				
Detector Phase	7	4	က	∞	2	2	~	9	
Switch Phase									
Vinimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0	
Minimum Split (s)	12.0	25.0	12.0	25.0	12.0	41.0	12.0	41.0	
otal Split (s)	21.0	40.0	21.0	40.0	17.0	42.0	17.0	45.0	
otal Split (%)	17.5%	33.3%	17.5%	33.3%	14.2%	35.0%	14.2%	35.0%	
Maximum Green (s)	16.0	33.0	16.0	33.0	12.0	35.0	12.0	35.0	
rellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	
ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
otal Lost Time (s)	2.0	7.0	5.0	7.0	5.0	7.0	2.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	
.ead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
/ehide Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
ime Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
ime To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	
Nalk Time (s)		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)		11.0		11.0		27.0		27.0	
Pedestrian Calls (#/hr)		0		0		0		0	
ntersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120	_								
Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	ced to phas	e 2:NBTI	and 6:S	3T, Start	of Green				
Natural Cycle: 90									
Sontrol Type: Actuated-Coordinated	ordinated								
Splits and Phases: 10: Do	10: Dorval Road & Weeroft Road	& Wvecr	off Road						
-	Ø2 (R)				1	, S		104	
42 s					218		4	0.8	
** \	(0/ 5/0)				•	-		Į.	
9	o (K)				3			07	

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Queues 10: Dorval Road & Wyecroft Road

Future Background AM Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroff Road

Future Background AM Upper Kerr Village (8124-01)

	1	†	>	ţ	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	BE	NBT	SBL	SBT	
Lane Group Flow (vph)	234	239	22	358	120	1435	158	1549	
v/c Ratio	09:0	0.30	0.09	0.65	0.53	0.62	0.44	69.0	
Control Delay	9.99	21.3	29.4	23.6	25.3	13.2	53.6	26.5	
Queue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.99	21.3	29.4	23.6	25.3	13.2	53.6	26.5	
Queue Length 50th (m)	27.0	11.6	3.7	15.3	6.4	9.98	18.2	96.2	
Queue Length 95th (m)	40.0	24.4	9.5	29.0	m10.1	m105.0	28.0	134.3	
Internal Link Dist (m)		155.6		199.3		494.4		672.1	
Turn Bay Length (m)	115.0		145.0		65.0		125.0		
Base Capacity (vph)	416	928	351	1027	246	2310	379	2241	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.26	90.0	0.35	0.49	0.62	0.45	69:0	
Intersection Summary									
more and an									

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	or 95th percentile queue is metered by upstream signal
3	95th
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3	_

Modernet				•	٠								
No.	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	S
150 150	Lane Configurations	*	₩		*	₹		×	4413		F	4413	
150 115 115 105 20 120 210 110 1260 60 145 986 150 1500 1900	Traffic Volume (vph)	215	115	105	20	120	210	110	1260	09	145	982	440
1900 1900	Future Volume (vph)	215	115	105	20	120	210	110	1260	09	145	982	440
50 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 7.0 5.0 7.0 5.0 7.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	9
1,00 0.95 1.00 0.95 1.00 0.91 0.97 0.91 0.97 0.91 0.97 0.91 0.97 0.91 0.97 0.91 0.97 0.91 0.97 0.91 0.97 0.91 0.97 0.92	Total Lost time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
1,00	Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
1.00	Frpb, ped/bikes	0.1	0.99		1.00	0.99		1.00	1.00		1.00	0.1	
1,00	Fipb, ped/bikes	9.5	00.1		9.5	0.0		9.5	0.1		9.5	0.0	
1127 3.056 1637 3.135 1641 5.033 34.33 4665 1600 100	FIL Protected	0.00	100		0.00	100		0.00	100		90.	0.90	
12 10 10 10 10 10 10 10	Satd Flow (prot)	3127	3066		1637	3135		1641	5033		3433	4665	
117 3066 1039 3135 151 5033 3433 4665 1032 0392 0392 0392 0392 0392 0392 0392 1034 151 140 22 140 228 151 1503 3 3 2 10	Fit Permitted	0.95	1.00		09:0	1.00		0.09	1.00		0.95	1.00	
F 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	3127	3066		1039	3135		151	5033		3433	4665	
124 125 114 22 130 228 120 1370 65 158 1071 234 151 22 161 0 10 13 0 0 53 128 7% 9% 10% 5% 2% 10% 2% 1496 128 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 128 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 128 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 149 27.4 20.3 16.4 63.4 52.0 12.7 53.3 149 27.4 20.3 16.4 63.4 52.0 12.7 53.3 149 27.4 20.3 16.4 63.4 52.0 12.7 53.3 149 27.4 20.3 16.4 63.4 52.0 12.7 53.3 149 27.4 20.3 16.4 63.4 52.0 12.7 53.3 150 7.0 5.0 7.0 5.0 5.0 5.0 5.0 50 5.0 5.0 5.0 5.0 5.0 5.0 50 50 5.0 5.0 5.0 5.0 50 50 5.0 5.0 5.0 5.0 50 50 5.0 5.0 5.0 5.0 50 50 5.0 5.0 5.0 5.0 50 50 5.0 5.0 5.0 5.0 50 50 5.0 5.0 5.0 50 50 5.0 5.0 5.0 50 50 5.0 5.0 5.0 50 50 5.0 5.0 5.0 50 50 5.0 5.0 5.0 50 50 5.0 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 5.0 50 50 50 50 50 50 50 50	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
h) 0 88 0 0 197 0 130 1432 0 158 1496 2 161 0 120 1432 0 158 1496 2 1 17 0 22 161 0 120 1432 0 158 1496 1 12% 7% 9% 10% 5% 2% 10% 2% 1% 5% 10% 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 7 4 8 8 6 6 7 0 0 0 0 0 0 0 0 0 14.9 27.4 20.3 16.4 63.4 52.0 127 53.3 0.17 0.14 0.53 0.43 0.11 0.44 5.0 70 5.0 70 5.0 70 5.0 5.0 5.0 5.0 0.02 0.07 0.05 0.00 0.05 0.28 0.48 0.51 0 1.00 1.00 1.00 1.00 1.00 1.30 0.49 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	234	125	114	22	130	228	120	1370	92	158	1071	478
124	RTOR Reduction (vph)	0	88	0	0	197	0	0	က	0	0	23	
12% 7% 9% 10% 5% 2% 10% 2% 10% 5% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 2% 10% 2% 2% 10% 2% 2% 2% 2% 2% 2% 2%	Lane Group Flow (vph)	234	151	0	22	161	0	120	1432	0	158	1496	
12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 14% 7	Confl. Peds. (#/hr)	2		က	က		2	τ-					
Prof. NA Pun-fol NA Pun-fol NA Prof.	Heavy Vehicles (%)	15%	%/	%6	10%	2%	2%	10%	5%	1%	2%	2%	7%
Prot NA pm+pt NA pm+pt NA Prot	Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	
7 4 3 8 5 2 1 149 274 203 164 634 520 127 149 274 203 164 634 520 127 149 274 203 164 634 520 127 141 273 164 634 520 127 101 023 017 014 053 043 011 50 50 50 70 70 50 50 50 50 50 50 50 50 70 50 30<	Turn Type	Prot	NA		pm+pt	M		pm+pt	N N		Prot	NA	
14.9 27.4 20.3 16.4 6.34 5.20 12.7 14.9 27.4 20.3 16.4 6.34 5.20 12.7 0.12 0.23 0.17 0.14 0.53 0.43 0.11 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 388 700 195 428 221 2180 363 5.0 0.25 0.00 0.05 0.28 0.05 5.0 0.20 0.01 0.38 0.23 0.05 6.0 0.22 0.11 0.38 0.54 0.05 7.0 0.00 0.05 0.24 0.05 7.0 0.01 0.01 0.01 0.03 0.49 1.00 7.0 1.00 1.00 1.00 1.00 1.00 7.0 1.00 1.00 1.00 1.00 0.44 8.3 3.9 0.3 0.2 1.2 26.1 1.98 5.00 8.4 1.7 48.0 1.48 5.0 9.0 1.20 0.62 1.20 1.48 9.0 1.20 0.62 0.000 1.0 1.0 0.05 0.000 1.0 1.0 0.05 0.000 1.0 1.0 0.05 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0	Protected Phases	7	4		က	∞		2	2		_	9	
149 274 203 164 634 520 127 149 27.4 20.3 164 634 520 127 149 27.4 20.3 164 634 520 127 149 27.4 20.3 164 634 520 127 150 7.0 5.0 7.0 5.0 7.0 50 7.0 5.0 7.0 5.0 7.0 50 5.0 5.0 5.0 5.0 5.0 50 5.0 5.0 5.0 5.0 5.0 50 5.0 5.0 5.0 5.0 5.0 50 5.0 5.0 5.0 5.0 5.0 50 60 60 60.5 60.5 60.5 50 60 60.5 60.5 60.5 60 60 60.2 60.5 60.5 60 60 60.2 60.5 60.5 60 60 60.5 60.5 60.5 60 60 60.5 60.5 60.5 60 60 60.5 60.5 60.5 60 60 60.5 60.5 60.5 60 60 60.5 60 60 60.5 60 60 60.5 60 60 60.	Permitted Phases				∞			2					
14.9 27.4 20.3 16.4 63.4 52.0 12.7 0.12 0.23 0.14 0.14 0.53 0.43 0.11 0.12 0.23 0.14 0.14 0.53 0.43 0.11 0.10 5.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 0.00 0.00 0.00 0.05 0.03 0.28 0.05 0.00 0.02 0.11 0.38 0.54 0.66 0.44 49.8 37.6 42.0 47.1 18.2 26.9 50.3 0.00 1.00 1.00 1.00 1.30 0.49 1.00 0.03 0.04 1.00 1.00 1.00 1.00 1.00 1.00 0.04 4.05 3.0 3.0 3 0.5 1.2 2.4 0.8 1.0 0.05 0.22 0.11 0.38 0.54 0.66 0.44 0.06 0.22 0.11 0.38 0.54 0.66 0.44 0.00 0.00 0.00 0.00 0.00 0.00 0.	Actuated Green, G (s)	14.9	27.4		20.3	16.4		63.4	52.0		12.7	53.3	
0,12 0,23 0,17 0,14 0,53 0,43 0,11	Effective Green, g (s)	14.9	27.4		20.3	16.4		63.4	52.0		12.7	53.3	
(s) 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 6.0 7.0 6.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	Actuated g/C Ratio	0.12	0.23		0.17	0.14		0.53	0.43		0.11	0.44	
vph) 50 50 50 50 50 vph) 388 700 195 428 221 2180 56 vph) 388 700 600 6005 600	Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
(vph) 388 700 195 428 221 2180 363 (vph) 600 0.05 0.005 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.04 0.05 0.04 0.04 0.04 0.04 0.04 0.04 0.05 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.04 1.00 0.03 0.44 1.00 0.03 0.04 1.00 0.03 0.04 1.00 0.03 0.04 1.00 0.03 0.04 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 1.00 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 0.05 </td <td>Vehide Extension (s)</td> <td>2.0</td> <td>2.0</td> <td></td> <td>2.0</td> <td>2.0</td> <td></td> <td>2.0</td> <td>2.0</td> <td></td> <td>2.0</td> <td>2.0</td> <td></td>	Vehide Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Color Colo	Lane Grp Cap (vph)	388	200		195	428		221	2180		363	2072	
10 10 10 10 10 10 10 10	v/s Ratio Prot	c0.07	0.05		0.00	c0.05		c0.05	0.28		0.05	00.32	
to 060 022 0.11 0.38 0.54 0.66 0.44 49,8 37,6 42,0 47,1 18,2 26,9 50,3 cbr 100 100 100 130 0.49 1.00 eb 2,3 6 37,9 42,5 48,3 26,1 13,9 52,0 b D D D D D D D D y (s) 45,7 48,0 14,8 52,0 mmary trol Delay 28,4 HCM 2000 Level of Service C tme to Capacity ratio 0,62 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,	v/s Ratio Perm				0.02			0.23					
d1 498 37.6 42.0 47.1 182 26.9 50.3 cdr (4) 49.8 37.6 42.0 47.1 182 26.9 50.3 cdr (4) 42.5 48.3 26.1 13.9 62.0 62.0 49.5 17.0 1.00 1.00 1.00 1.00 1.30 0.49 1.00 1.00 1.00 1.00 1.00 1.30 0.49 1.00 1.00 1.00 1.00 1.30 0.49 1.00 1.00 1.00 1.00 1.30 0.49 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio	09:0	0.22		0.11	0.38		0.54	99.0		0.44	0.72	
ctor 1.00 1.00 1.00 1.30 0.49 1.00 lay, d2 3.9 0.3 0.5 1.2 2.4 0.8 1.07 s 53.6 37.9 42.5 48.3 26.1 13.9 52.0 ly (s) D D D D C B D D y (s) 45.7 48.0 14.8 D mmary memory tro Delay 28.4 HCM 2000 Level of Service C Length (s) 7.7% Sum of lost time (s) 24.0 pacity Utilization 7.7% ICU Level of Service C (min) 15.0 Sum of lost time (s) 24.0 (min) 15.0 Sum of lost time (s) 24.0 (min) 15.0 Sum of lost time (s) 24.0 C	Uniform Delay, d1	49.8	37.6		45.0	47.1		18.2	26.9		50.3	27.3	
lay, d2 33 0.3 0.5 1.2 2.4 0.8 1.7 (17 d) by d2 2.0 2.0 1.3 5.2 0.0 by d2 2.0 1.4 8.0 1.7 (18 b) by (8) 2.0 1.4 8.0 1.	Progression Factor	1.00	1.00		1.00	1.00		1.30	0.49		1.00	1.00	
S36 37.9 42.5 48.3 26.1 13.9 52.0	Incremental Delay, d2	3.9	0.3		0.5	1.2		2.4	0.8		1.7	2.2	
y (s) D D D C B D D D C M B D D D C M B D D D D D D D D D D D D D D D D D D	Delay (s)	53.6	37.9		42.5	48.3		26.1	13.9		52.0	29.5	
y(s) 45.7 48.0 14.8 mmary D B B minary 28.4 HCM 2000 Level of Service C rine to Capacity ratio 0.62 MCM 2000 Level of Service C Length (s) 120.0 Sum of lost time (s) 24.0 pacity Utilization 7.77% ICU Level of Service C (min) 15 15 15	Level of Service	Ω	□		□	۵		ပ	В		□	ပ	
D D B B	Approach Delay (s)		45.7			48.0			14.8			31.6	
28.4 HCM 2000 Level of Service 0.62 1.20.0 Sum of lost time (s) 71.7% ICU Level of Service 1.5	Approach LOS		Ω			Ω			ш			O	
28.4 HCM 2000 Level of Service 0.62 120.0 Sum of lost time (s) 71.7% ICU Level of Service 15	Intersection Summary												
0.62 120.0 Sum of lost time (s) 71.7% ICU Level of Service 15	HCM 2000 Control Delay			28.4	Ĭ	CM 2000	Level of	Service		ပ			
120.0 Sum of lost time (s) zation 71.7% ICU Level of Service 15	HCM 2000 Volume to Cap	acity ratio		0.62									
Utilization 71.7% ICU Level of Service	Actuated Cycle Length (s)			120.0	รั	um of lost	time (s)			24.0			
	Intersection Capacity Utiliz	ation		71 7%	9	o leve I I	f Service			٢			
					!		3)			

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HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

	4	>	€	←	→	*	
Movement	盟	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	-	*	F	*	₩		
Traffic Volume (veh/h)	22	115	105	029	535	110	
Future Volume (Veh/h)	52	115	105	029	535	110	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly flow rate (vph)	27	124	113	720	575	118	
Pedestrians	2						
Lane Width (m)	3.6						
Walking Speed (m/s)	[-						
Percent Blockage	0						
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	1225	352	869				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1225	352	869				
tC, single (s)	8.9	7.0	4.2				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.3				
p0 queue free %	85	8	87				
cM capacity (veh/h)	121	636	864				
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
Volume Total	27	124	113	360	360	383	310
Volume Left	27	0	113	0	0	0	0
Volume Right	0	124	0	0	0	0	118
cSH	151	929	864	1700	1700	1700	1700
Volume to Capacity	0.18	0.19	0.13	0.21	0.21	0.23	0.18
Queue Length 95th (m)	4.8	5.5	3.4	0.0	0.0	0.0	0.0
Control Delay (s)	34.1	12.0	8.6	0.0	0.0	0.0	0.0
Lane LOS	Ω	ш	⋖				
Approach Delay (s)	16.0		1.3			0.0	
Approach LOS	ပ						
Intersection Summary							
Average Delay			21				
Intersection Canacity Utilization			37.5%	2	ICLL Level of Service	Service	d
Analysis Period (min)			45	2		3	=
ליוווין סטויס י פופלוטווי			2				

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Synchro 11 Report Page 1

Timings 2: Kerr Street & Shepherd Road

Future Background PM Upper Kerr Village (8124-01)

	04					4				5.0	22.0	33.0	31%	29.0	3.0	1.0					3.0	3.0	0:0	0:0	None	2.0	11.0	0					
→	SBT	₩	460	460	₹	9		9		18.0	28.2	75.0	69.4%	8.69	3.3	1.9	0.0	5.2			3.5	3.0	0.0	0.0	Min	10.0	13.0	2					
۶	SBL	y -	155	155	pm+pt	-	9	-			11.0								Lead	Yes	2.5	3.0	0:0	0.0	None								
•	NBR	¥C	120	120	Perm		2	2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Min	10.0	13.0	2					
←	NBT	₩	280	280	Ν	2		2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Min	10.0	13.0	2					
Ļ	WBT	æ	0	0	Ν	∞		∞		2.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0					
-	WBL	<i>y</i> -	105	105	Perm		∞	∞		2.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0					pooc
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 108	Actuated Cycle Length: 49.4	Natural Cycle: 65	Control Type: Semi Act-Uncoord

₹ 104 Splits and Phases: 2: Kerr Street & Shepherd Road

P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Future Background PM Queues 2: Kerr St

Queues 2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
			l		l		
	-	ţ	+	*	۶	→	
Lane Group	. WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	108	149	598	124	160	474	
v/c Ratio	0.41	0.23	0.44	0.19	0.27	0.21	
Control Delay	23.2	0.8	13.0	3.7	5.2	4.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.2	0.8	13.0	3.7	5.2	4.7	
Queue Length 50th (m)	8.0	0.0	18.6	0.0	4.2	7.5	
Queue Length 95th (m)	21.6	0.0	35.9	8.0	11.5	15.7	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	802	1102	3373	1467	832	3574	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.14	0.18	0.08	0.19	0.13	
Intersection Summary							

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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Background PM Upper Kerr Village (8124-01)

Perm 460 460 460 1900 5.2 0.95 1.00 1.00 1.00 3574 3574 30.6 30.6 0.62 5.2 3.5 3.5 2218 0.13 Ϋ́ 0.21 4.2 A 474 1.9 1.0 0.97 % 0 30.6 30.6 0.62 4.0 2.5 569 60.04 0.13 0.28 4.2 1.00 155 156 1900 1000 1.00 1.00 1.00 0.95 0.33 625 0.97 0 2 % pm+pt Perm 2 19.0 0.39 5.2 3.5 5.4 0.03 0.08 9.6 1.00 0.1 ⋖ 13.2 19.0 19.0 0.39 5.2 3.5 1363 c0.17 0.44 11.2 1.00 0.3 11.5 B B B 580 580 580 1900 5.2 0.95 1.00 1.00 1.00 3539 3539 0.97 969 % ≨ 0 0 1900 0.92 Perm 2% HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service 000% 145 145 900 0 4.0 1.00 0.98 1.00 0.85 1.00 1.573 1.00 1.00 1.00 0.92 0.09 16.4 1.00 0.1 16.5 B B 17.3 B 2% 9.5 9.5 0.19 4.0 3.0 3.0 0.02 ≨ 9.5 9.5 0.19 4.0 3.0 265 0.41 17.4 1.00 1.0 18.5 B Perm 9.4 0.40 49.3 52.4% 1900 5% 000 5% 0.0 A Ť 000 5% Perm HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio Actuated Cycle Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group Traffic Valume (vph)
Traffic Valume (vph)
Ideal Flow (vphg)
Total Lost time (s)
Land Lull, Factor
Frob, ped/bikes
Frob, ped/bi v/c Ratio Uniform Delay, d1 Progression Factor Incremental Delay, d2 Turn Type
Protected Phases
Permitted Phases
Actuated Green, G (s) Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Grp Cap (vph)
vs Ratio Prot Heavy Vehicles (%) Bus Blockages (#/hr) Delay (s) Level of Service Approach Delay (s) Approach LOS

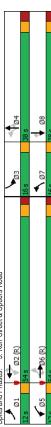
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Future Background PM Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	/	-	↓	4	•	←	•	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<i>y-</i>	++	*	F	**	¥C	<i>y</i> -	+	¥.	4	+	*
Traffic Volume (vph)	65	280	130	300	890	200	140	170	235	290	270	2
Future Volume (vph)	92	280	130	300	830	200	140	170	235	290	270	20
Turn Type	pm+pt	Ϋ́	Perm	pm+pt	ΑΝ	Perm	pm+pt	Ϋ́	Perm	Prot	¥	Perm
Protected Phases	Ψ-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Detector Phase	~	9	9	2	2	2	7	4	4	က	œ	00
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Total Split (s)	12.0	54.0	54.0	12.0	54.0	54.0	16.0	38.0	38.0	16.0	38.0	38.0
Total Split (%)	10.0%	45.0%	45.0%	10.0%	45.0%	45.0%	13.3%	31.7%	31.7%	13.3%	31.7%	31.7%
Maximum Green (s)	9.0	48.1	48.1	9.0	48.1	48.1	13.0	31.7	31.7	13.0	31.7	31.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0:0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		15	15		35	35		32	35
Intersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Kerr Street & Speers Road



P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Future Background PM Upper Kerr Village (8124-01) Queues 3: Kerr Street & Speers Road

	1	†	1	-	ļ	4	•	←	•	۶	→	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	611	137	316	937	526	147	179	247	305	284	12
v/c Ratio	0.20	0.39	0.18	0.65	0.52	0.52	0.50	0.51	0.52	0.82	0.75	0.20
Control Delay	11.0	22.9	10.4	22.3	23.3	4.0	32.3	47.5	9.0	70.4	56.8	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	22.9	10.4	22.3	23.3	4.0	32.3	47.5	9.0	70.4	26.8	7.5
Queue Length 50th (m)	8.8	57.4	9.4	34.5	78.3	0.0	24.2	38.0	1.0	36.7	63.5	0.0
Queue Length 95th (m)	18.5	79.2	21.2	#71.6	115.5	21.7	35.1	54.8	20.5	9.75#	85.9	10.1
Internal Link Dist (m)		138.4			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	326	1568	772	487	1792	1011	319	495	220	381	201	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	_
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.19	0.39	0.18	0.65	0.52	0.52	0.46	0.36	0.43	0.80	0.57	0.16

Intersection Summary

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

Queue shown is maximum after two cycles.

P.(81)24(01)OPA Process\3. Analysis\01 - Synctro\FTPM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

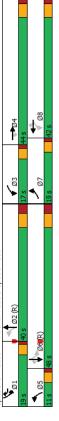
	\	Ť	<u> </u>	/	Ļ	4	•	—	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	‡	*-	r	‡	¥L.	je.	*	¥C.	F	*	¥L.
Traffic Volume (vph)	92	280	130	300	890	200	140	170	235	290	270	20
Future Volume (vph)	65	280	130	300	890	200	140	170	235	230	270	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	2.9	2.9	3.0	2.9	2.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	9.5	0.5	0.97	9:	9.	0.9	9:	9:	0.93	00.1	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
£,	1.00	1:00	0.85	1.00	9.1	0.85	1.00	1.00	0.85	1.00	1:00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1801	3511	1560	1750	3539	1485	1771	1877	1486	3467	1900	1501
FIt Permitted	0.25	1.00	1.00	0.33	1.00	1.00	0.32	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	468	3511	1560	617	3539	1485	601	1877	1486	3467	1900	1501
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	89	611	137	316	937	526	147	179	247	302	284	74
RTOR Reduction (vph)	0	0	9/	0	0	263	0	0	196	0	0	59
Lane Group Flow (vph)	89	611	61	316	937	263	147	179	21	302	284	12
Confl. Peds. (#/hr)	93		2	2		8	32		35	32		35
Heavy Vehicles (%)	%0	2%	%0	3%	5%	5%	1%	%0	1%	1%	%0	%0
Bus Blockages (#/hr)	0	4	0	0	0	0	0	က	0	0	0	0
Turn Type	pm+pt	AA	Perm	pm+pt	A	Perm	pm+pt	NA	Perm	Prot	¥	Perm
Protected Phases	_	9		2	7		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Actuated Green, G (s)	29.8	53.6	53.6	69.3	60.1	60.1	34.0	22.6	22.6	12.9	24.1	24.1
Effective Green, g (s)	29.8	53.6	53.6	69.3	60.1	60.1	34.0	22.6	22.6	12.9	24.1	24.1
Actuated g/C Ratio	0.50	0.45	0.45	0.58	0.50	0.50	0.28	0.19	0.19	0.11	0.20	0.20
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	302	1568	969	476	1772	743	281	323	279	372	381	301
v/s Ratio Prot	0.01	0.17		c0.02	0.26		0.02	0.10		60.00	c0.15	
v/s Ratio Perm	0.10		0.0	c0.31		0.18	0.10		0.03			0.01
v/c Ratio	0.23	0.39	0.09	99.0	0.53	0.35	0.52	0.51	0.18	0.82	0.75	0.05
Uniform Delay, d1	16.2	22.2	19.1	14.0	20.3	18.2	¥.	43.7	40.9	52.4	45.1	38.7
Progression Factor	0.79	5.5 55.0	5.59	0.0	1.00	9.5	9.5	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	0.2	3.1	=	<u>ر.</u> دن	ر دن	9.	0.4	12.9	8.2	0.1
Delay (s)	13.0	21.6	49.8	17.1	21.5	19.5	35.4	45.3	41.4	65.3	53.3	38.8
Level of Service	ш	ပ	□	ш	ပ	ш	۵	۵	□	ш	□	۵
Approach Delay (s)		25.6			20.1			41.1			57.2	
Approach LOS		O			O			Ω			ш	
Intersection Summary												
HCM 2000 Control Delay			30.8	Ĭ	HCM 2000 Level of Service	Level of	Service		ပ			
HCM 2000 Volume to Capacity ratio	city ratio		0.72									
Actuated Cyde Length (s)			120.0	ช	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	tion		78.5%	೦	ICU Level of Service	of Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

P.\81\24\01\0PA Process\3. Analysis\01 - SynchroFTPM.syn BA Group - EFS

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Future Background PM Upper Kerr Village (8124-01) Timings 4: Dorval Road & Speers Road

ane Group							-	-		•	
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
ane Configurations	K.	ŧ	*	*	ŧ	*	*	₩	*	*	*
Fraffic Volume (vph)	415	515	20	195	069	475	65	615	270	685	375
-uture Volume (vph)	415	515	20	195	069	475	65	615	270	685	375
Furn Type	Prot	Ϋ́	Perm	pm+pt	₹	vo+mq	pm+pt	₹	pm+pt	Ϋ́	Perm
Protected Phases	7	4		က	∞	_	2	2	-	9	
Permitted Phases			4	∞		∞	2		9		9
Detector Phase	7	4	4	က	∞	_	5	2	-	9	9
Switch Phase											
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0
Minimum Split (s)	11.0	45.0	45.0	11.0	42.0	11.0	11.0	40.0	11.0	40.0	40.0
Fotal Split (s)	19.0	0.44	0.44	17.0	45.0	19.0	11.0	40.0	19.0	48.0	48.0
Fotal Split (%)	15.8%	36.7%	36.7%	14.2%	35.0%	15.8%	9.5%	33.3%	15.8%	40.0%	40.0%
Maximum Green (s)	15.0	37.0	37.0	13.0	35.0	15.0	7.0	33.0	15.0	41.0	41.0
rellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1:0	1:0	3.0	1.0	3.0	3.0
-ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fotal Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0
-ead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag
_ead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehide Extension (s)	3.0	2.0	2.0	3.0	5.0	3.0	3.0	2.0	3.0	2.0	2.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	Q-Min
Nalk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0
Pedestrian Calls (#/hr)		2	2		2			2		2	2
ntersection Summary											
Sycle Length: 120											
Actuated Cycle Length: 120											
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL 8	nd 6:SB	TL, Start	of Green						
Natural Cycle: 115											
Control Type: Actuated-Coordinated	linated										



P.(81)24(01)OPA Process\3. Analysis\01 - Synctro\FTPM.syn BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Background PM Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Background PM Upper Kerr Village (8124-01)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Group Flow (vph)	451	560	72	212	750	516	71	750	293	745	408	
v/c Ratio	0.92	0.50	0.09	0.54	0.78	0.72	0.25	0.79	0.89	0.58	0.51	
Control Delay	75.8	35.8	0.3	33.1	54.8	23.3	21.2	46.8	59.9	16.9	2.7	
Queue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	75.8	35.8	0.3	33.1	54.8	23.3	21.2	46.8	59.9	16.9	2.7	
Queue Length 50th (m)	~59.7	57.4	0.0	33.6	77.4	37.7	9.1	84.4	29.8	8.49	6.4	
Queue Length 95th (m)	#91.8	74.0	0.0	59.9	108.3	9.77	17.7	107.0	#39.8	29.4	3.7	
Internal Link Dist (m)		412.3			472.1			621.6		494.4		
Turn Bay Length (m)	0.09		0.09	85.0		55.0	70.0		110.0			
Base Capacity (vph)	492	1118	288	406	1034	719	287	975	330	1292	908	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reducth	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.92	0.50	0.09	0.52	0.73	0.72	0.25	0.77	0.89	0.58	0.51	
Inforcection Cummany												

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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Lane Configurations	Ę	ŧ	E	-	ŧ	_	_	<u>*</u>		-	ŧ	_
Traffic Volume (vph)	415	212	20	195	069	475	65	615	75	270	685	375
Future Volume (vph)	415	515	20	195	069	475	65	615	75	270	685	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1:00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
F	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3560	1556	1786	3546	1581	1805	3516		1787	3574	1599
Flt Permitted	0.95	1.00	1.00	0.39	1.00	1.00	0.32	1.00		0.15	1.00	1.00
Satd. Flow (perm)	3433	3560	1556	724	3546	1581	809	3516		279	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	260	54	212	750	516	71	899	82	293	745	408
RTOR Reduction (vph)	0	0	37	0	0	43	0	∞	0	0	0	230
Lane Group Flow (vph)	451	260	17	212	750	473	71	742	0	293	745	178
Confl. Peds. (#/hr)	2		5	2		2						
Heavy Vehicles (%)	5%	%	5%	1%	1%	1%	%0	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	A	Perm
Protected Phases	7	4		က	00	_	5	2		~	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.2	37.4	37.4	44.6	32.4	48.5	38.1	32.3		52.4	42.6	42.6
Effective Green, g (s)	17.2	37.4	37.4	44.6	32.4	48.5	38.1	32.3		52.4	42.6	42.6
Actuated g/C Ratio	0.14	0.31	0.31	0.37	0.27	0.40	0.32	0.27		0.4	0.36	0.36
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	2.0	5.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	492	1109	484	377	957	638	250	946		324	1268	292
v/s Ratio Prot	c0.13	0.16		90.0	c0.21	0.10	0.01	0.21		00.12	0.21	
v/s Ratio Perm			0.01	0.15		0.20	0.08			00.27		0.11
v/c Ratio	0.92	0.50	0.03	0.56	0.78	0.74	0.28	0.78		0.00	0.59	0.31
Uniform Delay, d1	20.7	33.7	28.7	27.0	40.6	30.4	29.2	40.6		27.3	31.5	28.1
Progression Factor	9.0	1.00	1.00	1.42	1.20	0.80	1.00	1.00		1.48	0.48	0.17
Incremental Delay, d2	21.8	8. 5	0.1	ر. ان	8.4	4.5	9.6	6.5		23.4	9.	1.2
Delay (s)	72.5	8 5 5 7	78.8	40.3	53.6	28.9	29.8	47.1		63.8	16.9	ა. ა.
Level of Service	ш	ָ כ כ	٥	2	2 ,	٥	٥	ט ל		ш	2 6	<
Approach Delay (s)		50.3			43.1			45.6			23.3	
Approach LOS								۵			ပ	
Intersection Summary												
HCM 2000 Control Delay			39.2	I	CM 2000	HCM 2000 Level of Service	Service		O			
HCM 2000 Volume to Capacity ratio	city ratio		0.89									
Actuated Cycle Length (s)			120.0	S	um of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	tion		85.1%	⊆	CU Level	ICU Level of Service	a)		ш			
Analysis Period (min)			15									
c Critical Lane Group												

P.:81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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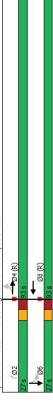
P.(81)24(01)OPA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Timings Future Background PM 5: St. Augustine Drive & Speers Road Upper Ker Village (8124-01)

5: St. Augustine Drive & Speers Road	ve & Sp	seers F	Road				Upper Kerr Village (8124-01)
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Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	*	₩.	₩.	¥C.	r	\$	
Traffic Volume (vph)	9	825	1120	22	2	.0	
Future Volume (vph)	10	825	1120	52	2	0	
Turn Type	Perm	Ϋ́	ΑN	Perm	Perm	NA	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	93.0		93.0	27.0	27.0	27.0	
Total Split (%)	77.5%		77.5%	22.5%	22.5%	22.5%	
Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
Yellow Time (s)	3.7		3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	O-Min	O-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	to phase	4:EBTL	and 8:WB	T, Start o	Green		
Natural Cycle: 35	dinated						
ייייטטר ישטר שאני ויייטטר	חוומופת						

Intersection Summary m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: St. Augustine Drive & Speers Road



P.18112401(DPA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

o. or. Augustine Dilve & opeers Road	5	ממוח	וממת				Upper Kerr VIIIage (8124-U1)
	4	†	ţ	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Group Flow (vph)	9	885	1177	26	2	10	
v/c Ratio	0.02	0.27	0.36	0.09	90.0	0.05	
Control Delay	[-	6.0	2.5	9.0	55.4	0.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	- -	6.0	2.5	9.0	55.4	0.5	
Queue Length 50th (m)	0.2	9.5	2.06	0.0	1.2	0:0	
Queue Length 95th (m)	m0.3	m9.1	2.0	0.0	5.3	0.0	
Internal Link Dist (m)		472.1	49.4			93.6	
Turn Bay Length (m)	20.0						
Base Capacity (vph)	403	3225	3240	472	311	384	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	000	0.27	0.36	900	000	003	

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

EBL EST EBL MBL WBT WBR NBL NBL <th>EBL EBT 10 10 10 10 10 10 10 1</th> <th>25 25 25 1900 0.96 26 26</th> <th></th> <th></th> <th></th> <th>000 96:0 000 %0</th> <th>0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</th> <th>NBR 25 25 25 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.</th> <th>SBL 5 5 1900 6.3 1.00 1.00 1.00 0.95 1805 0.95 0.95</th> <th>SBT 1900 0 0 0 1900 0 6.3 1.00 1.00 1.00 1.00 1.100 1.100 1.100 1.100 1.100 1.00</th> <th>100 100 100 00 00 00 00 00 00 00 00 00 0</th>	EBL EBT 10 10 10 10 10 10 10 1	25 25 25 1900 0.96 26 26				000 96:0 000 %0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	NBR 25 25 25 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	SBL 5 5 1900 6.3 1.00 1.00 1.00 0.95 1805 0.95 0.95	SBT 1900 0 0 0 1900 0 6.3 1.00 1.00 1.00 1.00 1.100 1.100 1.100 1.100 1.100 1.00	100 100 100 00 00 00 00 00 00 00 00 00 0
March Marc	10 825 10 825 10 825 10 825 10 825 10 100	25 25 1900 0.96 26 26				0006 0006 0006 0006	0.000	25 25 25 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	5 5 6.3 1.00 1.00 1.00 1.00 1.00 0.95 1.805 0.95 0.95	4000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	10 10 10 10 10 10 10 10 10 10 10 10 10 1
10 825 25 0 1120 10 0 0 25 5 0 0 1900 1900 1900 1900 1900 1900 19) 10 825 10 825 1900 825 1.00 1.00 1.00	25 1900 0.96 26 26				0006 %0	0.0000000000000000000000000000000000000	25 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	5 1900 6.3 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	0 0 0 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00	100000000000000000000000000000000000000
10 825 25 0 1120 10 0 0 25 5 5 0 100 1900 1900 1900 1900 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100) 10 825 100 1900 5.9 5.9 5.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 3552 0.25 1.00 444 3552 444 3552 444 3552 1.00 444 3552 1.00 889 ph) 0 1 ph) 10 884 5.9 104.0 884 10 104.0 104.0 884 10 104.0 104.0 884 10 104.0 884 10 104.0 884 10 10 10 10 10 10 10 10 10 10 10 10 10 1	25 1900 0.96 26 26				006 006 006 006 006 006 006	0.96	25 1900 6.3 1.00 1.00 1.00 1.00 1.64 1.00 1.64 1.00 1.04 1.00 1.04 1.00 1.04 1.00 1.04 1.00 1.00	6.3 6.3 1.00 1.00 1.00 1.00 0.95 1805 0.95 1805	0 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1900 1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	0.96 2.86 2.00 2.00				96:C 0 0 0,0 0,0 0,0	0.96	6.3 6.3 1.00 1.00 1.00 1.00 1.64 1.00 1.64 1.00 2.6 2.6 2.5 2.5	1900 6.3 1.00 1.00 1.00 1.00 0.95 1805 0.95 0.95	1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.96	00.96
1,00	5.9 5.9 5.9 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.96				96:C 0 0 %0	96.0	6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	6.3 1.00 1.00 1.00 0.85 1.00 1615 0.96	0.96
1,000 0.995 0.995 1,000 1,00	1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.25 1.00 0.25 1.00 0.27 1.00 0.96 0.96 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.98 0.99 0.99 0.90 0	0.96				96°C 0 0 0 0 0 0	96.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.96	0.00
1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.96				96°C 0 0 0 0 0 0 0	96.0	1.00 1.00 0.86 1.00 1.00 1.44 0.96 25 25	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 0.85 1.00 1.00 1.00 0.96	0.96
1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.96				96.C 0 0 0 0 0 0	96.0	1.00 0.86 1.00 1644 1.00 1.644 0.96 25 25	1.00 1.00 0.95 1805 0.95 1805	1.00 0.85 1.00 1.00 1.00 0.96	0.96
100 100 100 100 0.85 100 0.85 100 0.85 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 10	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.96				96.C 0 0 0 0 0	0.96	0.86 1.00 1.00 1.00 1.00 2.6 2.5 1	1.00 0.95 1805 0.95 1805 0.96	0.85 1.00 1615 1.00 1615 0.96	000000000000000000000000000000000000000
100 100	0.95 1.00 1800 3552 0.23 100 444 3552 100 444 3552 101 859 ph) 0 1 884 5 6.9 (s) 104,0 104,0 (s) 104,0 104,0 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87	0.96				96:C 0 0 0 0 0	0.96	1.00 1.00 1.00 1.00 0.96 2.5 2.5 1	0.95 1805 0.95 1805 0.96	1.00 1.00 1.00 0.96	000000000000000000000000000000000000000
1800 3552 3569 1644 1805 1615 1610 1000	1800 3552 1800 3552 444 3552 HF 0.36 0.96 ph) 0 1 0 859 ph) 10 84 5 18 Perm NA Perm NA 4 4 4 4 (s) 104.0 104.0 s) 104.0 104.0 s) 0.87 0.87 0.87 0.87	0.96				96.0 0 0 0 0 0	0.96	1644 1.00 1644 0.96 26 25 1	1805 0.95 1805 0.96	1615 1.00 1615 0.96	0.00 0 0 00%
100 100	0.23 1.00 HF 0.96 0.96 hP 0.96 1.00 ph) 0 1 884 ph) 10 884 ph) 10 884 (s) 104.0 14.0 (s) 104.0 104.0 (s) 0.87 0.87 0.87 0.87	0.96				0 %0 0 0 0 0	0.96	1.00 1644 0.96 26 25 1	0.95 1805 0.96	1.00 1615 0.96	0.96 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Harris H	HF 0.96 0.96 (0.96	0.96				96:0 0 0 0 0	0.96	1644 0.96 26 25 1	1805	0.96	0.96 10 0 0 0
F 0.96 0.9	HF 0.96 0.96 ph) 0 1 859 ph) 0 1 859 ph) 10 884 5 894 ph) 10 884 6 894 ph) 10 84 104.0 104	0.96				96:C 0 0 0 0	0.96	0.96 26 25 1	96.0	0.96	0.96
10 859 26 0 1167 10 0 0 26 5 0 10	ph) 10 859 ph) 10 844 5 0% 1% Perm NA 4 4 404 104.0 s) 104.0 104.0 s) 6.9 5.9 5.9 5.9 5.0 7.72	56			0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 %0	000	26 1		0	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
hth) 0 1 0 884 0 0 1777 0 0 0 0 1 5 0 10 5 5 5 5 5 5 0 0 10 6 7 1% 4% 0% 1% 0% 0% 0% 0% 0% 0% 7 104.0 104.0 104.0 104.0 104.0 3.8 3.8 3.8 5 104.0 104.0 104.0 104.0 3.8 3.8 3.8 3.8 5 2 6 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3	ph) 0 1 5 5 684 6 7 1% 7 104.0 104.0 8) 104.0 104.0 8) 104.0 104.0 9) 5.9 5.9 9) 5.9 5.9	c		177 NA NA	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 %	00	1	2		0 %0
bh) 10 884 0 0 1177 0 0 0 1 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ph) 10 884	>		177 1% NA	0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 %0	c	←	0	10	0 %0
5 5 5 5 6 0%	5 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	0	2 %	% N N N	2 %0	%0	>		2	0	%0
National Perm National Per	0% Perm 4 4 104.0 1C 5) 104.0 1C 5) 2.8 0.87 6) 3.0 5.9	2	%0	N %	%0	%0		100			%0
NA	Perm 4 4 (s) 104.0 105 (s) 104.0 105 (s) 5.9 (s) 3.0 (s) 2.0 (s)	4%		¥			%0	%0	%0	%0	
104.0 104.0 3.6 3.8	(s) 104.0 10 (s) 104.0 10 (0.87 (5.9 5.9 3)							Perm	Perm	≨°	
1040	(s) 104.0 10 s) 104.0 10 0.87 (5.9 5.9			x				c	¢	٥	
s) 104.0 104.0 104.0 3.8 3.8 1 04.0 104.0 104.0 3.8 3.9 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 8 8 8 8 8 8 8 8 8	(s) 104.0 10 s) 104.0 10 0.87 (5.9 5.9							2	9		
104.0 104.0	s) 104.0 10 0.87 (5.9 5.9		=	04:0				ω 	χ. Θ.		
0.87 0.87 0.87 0.87 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.0	0.87 (5.9 3.0		=	04:0				3.8	3.8	3.8	
59 59 59 59 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	s) 3.0			0.87				0.03	0.03	0.03	
30 30 30 30 30 30 30 30 30 30 30 30 30	3.0			5.9				6.3	6.3	6.3	
384 3078 3093 55 57 0.25 60.03 0.03 0.00 0.00 0.03 0.29 0.38 0.00 0.00 1.1 1.4 1.6 1.6 56.3 56.4 0.66 0.60 1.49 0.10 1.00 1.00 2 0.1 0.2 2.7 56.4 57.1 A A A A A A A A A A A A A A A A A A A	V0C			3.0				3.0	3.0	3.0	
0.02	‡00		m	8093				52	22	21	
0.02 0.09 0.08 0.00 0.00 0.00 0.00 0.00 0.00			5	0.33						0.00	
0.03 0.29 0.38 0.09 0.05 0.29 0.38 0.00 0.00 0.61 0.2 0.00 0.3 0.50 1.0 0.2 0.00 0.8 1.0 0.2 0.3 0.1 0.1 0.7 0.8 1.0 2.7 56.4 57.1 A A A A A A A A A A A A A A A A A A A	0.02							0.00	00.00		
1.1 1.4 1.6 56.3 56.4 2.0 66.0.50 1.49 1.00 1.00 2.0 0.3 0.0 0.3 0.0 0.1 2.7 56.4 57.1 2.7 56.4 57.1 3.0 HCM 2000 Level of Service A 1.0 0.37 CU Level of Service A 1.0 Sum of lost time (s) 12.2 1.0 Uslization 4.4% ICU Level of Service A 1.1 1.49 1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.20	0.03		_	0.38				0.02	0.09	0.01	
2 0.66 0.60 1.49 1.00 1.00 1.00 0.3 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	1:1			1.6				56.3	56.4	56.3	
2 0.1 0.2 0.3 0.1 0.7 1 0.7 1 0.7 1 0.7 1 0.8 1.0 2.7 56.4 E E E E E E E E E E E E E E E E E E E	99:0			1.49				1.00	1.00	1.00	
0.8 1.0 2.7 56.4 57.1 A A A A A A B B E E 1.0 2.7 56.4 A A A A B B E E Y y y y HCM 2000 Level of Service A B B B B B B B B B B B B B B B B B B	0.1			0.3				0.1	0.7	0.0	
A A A A A E E E 1.0 2.7 56.4 E E 2.7 56.4 E E 9 A A A B E 1.0 0.37 HCM 2000 Level of Service A A 1.2 0 Sum of lost time (s) 12.2 1.4 4% ICU Level of Service A A 1.5 12.0 Sum of lost time (s) 12.2 1.5 12.0 Sum of lost time (s) 12.2 1.5 12.5 12.5 12.5 12.5 12.5 12.5 12.5 1	0.8			2.7				56.4	57.1	56.3	
10 2.7 56.4 A A A E W y kelay 3.0 HCM 2000 Level of Service A to Capacity ratio 0.37 Sum of lost time (s) 12.0 Ullization 4.7% CU Level of Service A 15.0 Sum of lost time (s) 12.2 Ullization 4.7% CU Level of Service A 15.1 CU Level of Service A 15.2 A	V			∢				ш	ш	ш	
Y A A E Y 3.0 HCM 2000 Level of Service helay 3.0 HCM 2000 Level of Service th (s) 120.0 Sum of lost time (s) th (s) 120.0 Sum of lost time (s) th (s) 47.4% ICU Level of Service th (s) 15 1.0				2.7			56.4			9.99	
3.0 HCM 2000 Level of Service 120.0 Sum of lost time (s) 120.1 Sum of lost time (s) 120.1 Sum of lost time (s) 120.1 Sum of lost time (s) 120.2 Sum of lost time (s)	Approach LOS A			∢			ш			ш	
slay 3.0 HCM 2000 Level of Service Capacity ratio 0.37 0.37 In (s) 120.0 Sum of lost time (s) Utilization 47.4% ICU Level of Service 15 15	Intersection Summary										
Capacity ratio 0.37 120.0 Sum of lost time (s) 47.4% ICU Level of Service 15	HCM 2000 Control Delay	3.0	HCM	2000 Le	vel of Sen	vice		V			
h (s) 120.0 Sum of lost time (s) Utilization 47.4% ICU Level of Service 15		0.37									
Utilization 47.4% ICU Level of Service		120.0	Sum	of lost tin	(s) eu			12.2			
15		47.4%	ICOL	evel of S	ervice			⋖			
	Analysis Period (min)	15									

P.\81\2401\OPA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Background PM Upper Kerr Village (8124-01)

Lane Group	EBF	EBT	WBT	SBL	SBR	
Lane Configurations	<i>y</i> -	‡	₩.	je-	K.K	
Traffic Volume (vph)	265	745	1305	10	420	
Future Volume (vph)	265	745	1305	10	420	
Turn Type	pm+pt	Ϋ́	Ϋ́	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	4	4	
Switch Phase						
Minimum Initial (s)	0.9	38.0	38.0	10.0	10.0	
Minimum Split (s)	12.0	47.6	47.6	15.8	15.8	
Total Split (s)	17.0	102.0	85.0	38.0	38.0	
Total Split (%)	12.1%	72.9%	%2.09	27.1%	27.1%	
Maximum Green (s)	11.0	95.4	78.4	32.2	32.2	
Yellow Time (s)	4.0	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.0	2.9	2.9	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9	9.9	9.9	5.8	2.8	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehide Extension (s)	3.5	2.0	2.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min	C-Min	None	None	
Walk Time (s)		10.0	10.0			
Flash Dont Walk (s)		31.0	31.0			
Pedestrian Calls (#/hr)		2	2			
Intersection Summary						
Cycle Length: 140						
Actuated Cycle Length: 140						
Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	to phase 2	:EBTL ar	id 6:WBT	, Start of	Green	
Natural Cycle: 80						
Control Type. Actuated Coordinated	Late of Land					

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



P.(81)24(01)OPA Process\(\text{3. Analysis\(\text{01}\) - Synchro\FTPM\(\text{syn}\) BA Group - EFS

Future Background F	Upper Kerr Village (8124
Queues	6: Speers Road/Cornwall Road & Cross Avenue

Queues 6: Speers Road/Cornwall Road & Cross Avenue	wall R	toad &	Cross	Avent	er er	Future Background PM Upper Kerr Village (8124-01)
	4	†	↓	٠	•	
Lane Group	田田	B	WBT	SBL	SBR	
Lane Group Flow (vph)	276	9//	1375	9	438	
v/c Ratio	0.64	0.27	0.65	0.05	0.80	
Control Delay	26.0	3.8	21.4	54.3	30.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.0	3.8	21.4	54.3	30.6	
Queue Length 50th (m)	30.5	21.6	123.0	5.6	21.4	
Queue Length 95th (m)	67.0	37.0	162.8	7.8	40.2	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	431	2924	2100	415	858	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.27	0.65	0.02	0.51	
Intersection Summary						

Synchro 11 Report Page 15 P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Background PM Upper Kerr Village (8124-01)

Movement Lane Configurations Traffic Volume (yph) Traffic Volume (yph) Real How (yphg) Total Lost time (s) Total Fattor (print) Total Fattor (print) Total Flow (print) Total Flow (print)	EBL 265 265 265 1900 6.0	EBT	WBT	WBR	SBL	SBR	
ons (ph) (ph) (s) (s)	265 265 900 6.0	1	4				
(a) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	265 265 900 6.0	t	1		F	**	
(a) (b) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	265 900 6.0	745	1305	15	10	420	
	0.9	745	1305	12	10	420	
	0.0	1900	1900	1900	1900	1900	
	8	9.9	9.9		2.8	5.8	
		0.95	0.95		1.00	0.88	
	1.00	1.00	1.00		1.00	1.00	
	1.00	1.00	1.00		1.00	1.00	
	00.	1.00	1:00		1.00	0.85	
	0.95	1.00	1.00		0.95	1.00	
	703	3610	3567		1805	2733	
	0.11	1.00	1.00		0.95	1.00	
Satd. Flow (perm) 2	201	3610	3567		1805	2733	
) HH	96.0	96.0	96.0	96.0	96.0	96:0	
Adj. Flow (vph) 2	276	9//	1359	16	10	438	
	0	0	0	0	0	269	
(hdv)	276	9//	1375	0	10	169	
	2			2			
ides (%)	%9	%0	%	%0	%0	4%	
	pm+pt	N A	NA		Prot	Perm	
Protected Phases	ر د	2	9		4		
		110 4	V C0		44.0	14.0	
Adduated Green, G (s) 11. Effective Green G (s) 11.	113.4	113.4	92.4 82.4		14.2	14.2	
		0.81	0.59		0.10	0.10	
	0.9	9.9	9.9		2.8	5.8	
Vehicle Extension (s)	3.5	2.0	2.0		3.0	3.0	
Lane Grp Cap (vph) 4	431	2924	2099		183	277	
	c0.11	0.21	0.39		0.01		
Perm	c0.41					90.00	
	0.64	0.27	0.65		0.05	0.61	
	25.3	3.2	19.3		26.8	60.3	
	00.	1.00	1.00		1.00	1.00	
ıtal Delay, d2	3.4	0.5	9. 0		0.1	4.0	
	7.87	3.4	50.9		57.0	64.2	
Level of Service	ပ	∢ ;	ပ		ш ;	ш	
Approach Delay (s)		10.1	20.9		4.1		
Approach LOS		В	O		ш		
Intersection Summary							
HCM 2000 Control Delay			23.7	오	M 2000 L	HCM 2000 Level of Service	O
HCM 2000 Volume to Capacity ratio	ili ji		0.65				
Actuated Cycle Length (s)			140.0	Sul	Sum of lost time (s)	time (s)	18.4
Intersection Capacity Utilization			74.9%	ರ	ICU Level of Service	f Service	٥
Analysis Period (min)			15				

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HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

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Background PM	er Kerr Village (8124-01)
re Bac	pper Ker
Futu	⊃

	4	†	*	-	Ļ	1	•	←	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	9	0	10	9	0	8	2	250	10	20	999	25
Future Volume (Veh/h)	10	0	10	10	0	30	2	520	10	20	999	25
Sign Control		Stop			Stop			Free			Free	
Grade	C	%0	C	C	% 6		C	% 5	C		%0	0
Peak Hour Factor	0.35	0.95	0.35	0.35	0.35	0.35	0.35	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	Ξ	0	=	Ξ	0	32	2	547	-	51	200	56
Pedestrians		8			႙						2	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		1.			7:						1.1	
Percent Blockage		2			က						0	
Right tum flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								238			127	
pX, platoon unblocked	0.78	0.78	0.75	0.78	0.78	0.94	0.75			0.94		
vC, conflicting volume	1374	1373	733	1358	1380	288	746			288		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1155	154	479	1135	1163	525	497			525		
tC, single (s)	7.1	7.0	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.5	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	9	100	6	9	100	8	66			86		
cM capacity (veh/h)	119	117	436	127	143	504	723			934		
Direction. Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	22	43	563	747								
Volume Left	=	=	2	21								
Volume Right	=	35	=	56								
CSH	187	287	723	934								
Volume to Capacity	0.12	0.15	0.01	0.02								
Queue Length 95th (m)	3.0	4.0	0.2	0.5								
Control Delay (s)	56.9	19.8	0.2	9.0								
Lane LOS	Ω	ပ	∢	∢								
Approach Delay (s)	26.9	19.8	0.2	9.0								
Approach LOS	٥	O										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization	ion		%6.09	೦	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Background PM Upper Kerr Village (8124-01)

*	SBR		49	40			0.95	42																													
→	SBT	¢	625	625	Free	%0	0.95	658						None		262																					
←	NBT	4	515	515	Free	%0	0.95	545						None		103																					
✓	NBL		2	2			0.95	2									0.79	735			532	4.3		2.4	66	727	SB 1	700	0	42	1700	0.41	0.0	0.0		0.0	
1	EBR		10	10			0.95	1									0.79	714			909	6.3		3.4	97	422	NB 1	247	2	0	727	0.01	0.2	0.2	∢	0.2	
1	EBL	>	15	15	Stop	%0	0.95	16	32	3.6	[က					0.84	1266			096	6.4		3.5	8	232	EB 1	27	16	=	284	0.10	2.4	19.0	O	19.0	ပ
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	⊕(s)	po dueue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS

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ICU Level of Service

0.5 45.5% 15

Intersection Summary
Average Delay
Intersection Capacity Utilization
Analysis Period (min)

Future Background PM Upper Kerr Village (8124-01) Timings 9: Kerr Street & Stewart Street

o: 100 100 100 100 100 100 100 100 100 10							l		, , , , , , , , , , , , , , , , , , , ,
	^	†	-	ţ	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations		÷		4		÷		4	
Traffic Volume (vph)	20	9	9	15	9	395	52	515	
Future Volume (vph)	20	10	9	15	10	395	22	515	
Turn Type	Perm	Ν Α	Perm	Ϋ́	Perm	Ν	pm+pt	NA	
Protected Phases		4		∞			~	9	
Permitted Phases	4		∞		2		9		
Detector Phase	4	4	∞	∞	2	2	~	9	
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
Minimum Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
Total Split (%)	40.0%	40.0%	40.0%	40.0%	46.7%	46.7%	13.3%		
Maximum Green (s)	24.6	24.6	24.6	24.6	29.6	29.6	7.0		
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0		
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	2.1	0.0		
Lost Time Adjust (s)		0.0		0.0		0.0			
Total Lost Time (s)		5.4		5.4		5.4		5.4	
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	20	20	70	70	32	32		35	
Intersection Summary									
Cycle Length: 75									
Actuated Cycle Length: 75									
Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green Natural Cycler 75	to phase	2:NBTL	and 6:SB	TL, Start	of Green				
Control Type: Actuated-Coordinated	dinated								

-₽ ₽ 30 s ↓ √ √ 08 Splits and Phases: 9: Kerr Street & Stewart Street Ø2 (R) ♦ Ø6 (R) 01

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	†	Į.	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	8	109	456	674	
v/c Ratio	0.29	0.29	0.35	0.56	
Control Delay	21.6	10.0	7.9	11.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	7.9	11.1	
Queue Length 50th (m)	8.5	3.4	18.8	34.7	
Queue Length 95th (m)	16.5	13.0	26.0	105.2	
Internal Link Dist (m)	71.6	36.6	141.0	0.62	
Turn Bay Length (m)					
Base Capacity (vph)	44	225	1295	1195	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0 18	0.20	0.35	0.56	

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

Future Background PM Upper Kerr Village (8124-01)

	1	†	~	>	↓	4	•	-	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	20	9	15	10	15	75	9	395	15	22	515	20
Future Volume (vph)	20	10	15	10	15	75	10	395	15	22	515	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4			5.4			5.4			5.4	
Lane Util. Factor		0.0			0.0			1.00			1.00	
Frpb, ped/bikes		0.99			0.36			1.00			0.99	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
FIt Protected		0.97			0.90			00.0			100	
Satd Flow (prof)		1661			1562			1855			1803	
Fit Permitted		0.77			0.97			0.98			0.93	
Satd. Flow (perm)		1323			1518			1828			1683	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	ß	£	16	Ξ	16	85	Ξ	429	16	09	260	54
RTOR Reduction (vph)	0	13	0	0	89	0	0	_	0	0	က	0
Lane Group Flow (vph)	0	89	0	0	41	0	0	455	0	0	671	0
Confl. Peds. (#/hr)	20		15	15		20	32		25	25		35
Heavy Vehicles (%)	2%	20%	%0	%0	13%	5%	%0	1%	17%	1%	2%	%0
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	က	0
Turn Type	Perm	ΝA		Perm	Ν		Perm	NA		pm+pt	¥	
Protected Phases		4			œ			2		-	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)		13.2			13.2			51.0			51.0	
Effective Green, g (s)		13.2			13.2			51.0			51.0	
Actuated g/C Ratio		0.18			0.18			0.68			0.68	
Clearance Time (s)		5.4			5.4			5.4			5.4	
Vehicle Extension (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		232			267			1243			1144	
V/s Katlo Prot		0			0						9	
v/s Kato Perm		CU:U5			0.03			0.25			07.00	
V/c Kato		0.29			0.76			0.37			0.59	
Uniform Delay, d1		70.8			7.97			5.1			6.4	
Progression Factor		9.5			9.5			1.00			1.00	
Incremental Delay, d2		1.0			4.0			8.0			0.8	
Delay (s)		27.8			70.5			5.9			7.7	
Level of Service		ပ			ပ			⋖			⋖	
Approach Delay (s)		27.8			26.5			5.9			7.2	
Approach LOS		O			O			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			9.6	ĭ	HCM 2000 Level of Service	evel of S	ervice		⋖			
HCM 2000 Volume to Capacity ratio	ty ratio		0.55									
Actuated Cycle Length (s)			75.0	Sn	Sum of lost time (s)	time (s)			13.8			
Intersection Capacity Utilization	uc		81.6%	⊇	U Level o	f Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

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Timings 10: Dorval Road & Wyecroft Road

Future Background PM Upper Kerr Village (8124-01)

Lane Configurations Table		1	1	١	ţ	1	•	+	٠	-	
Signature Sign	C	Ē		•	F	5		- 5	ā	- G	
10 386 215 60 90 475 95 1265 110 10 386 215 60 90 475 95 1265 110 11 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 3 3 3 3 3 3 3 3	Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
1) 385 215 60 90 475 95 1265 110 1	Lane Configurations	-	+	F	+	* _	F	₹	F	₩	
10 386 215 60 90 475 95 1265 110 10 10 10 10 10 10	Traffic Volume (vph)	382	215	09	06	475	92	1265	110	1105	
Prof. NA pm+pt NA pm+or pm+pt NA Prof. 7 4 3 8 1 5 2 1 1 5 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 1	Future Volume (vph)	382	215	09	90	475	92	1265	110	1105	
7 4 3 8 1 5 2 1 1 7 4 3 8 1 5 2 1 7 7 4 3 8 1 5 2 1 7 7 4 3 8 1 5 2 1 7 0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Turn Type	Prot	Ϋ́	pm+pt	Ä	vo+mq	pm+pt	₹	Prot	N A	
7. 0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Protected Phases	7	4	က	∞	~	2	2	-	9	
7 4 3 8 1 5 2 1 7 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Permitted Phases			∞		∞	2				
7.0 10.0 7.0 10.0 7.0 7.0 200 7.0 7.0 21.0 21.0 25.0 12.0 25.0 12.0 12.0 41.0 12.0 41.0 12.0 41.0 12.0 40.0 12.0 40.0 17.0 17.0 42.0 17.0 42.0 17.0 42.0 17.0 42.0 17.0 42.0 17.0 42.0 42.0 17.0 42	Detector Phase	7	4	က	∞	Ψ.	2	2	Ψ	9	
12.0 25.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12	Switch Phase										
120 250 120 120 120 120 120 120 120 120 120 12	Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	
210 40.0 21.0 40.0 17.0 17.0 42.0 17.0 17.0 42.0 17.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 4	Minimum Split (s)	12.0	25.0	12.0	25.0	12.0	12.0	41.0	12.0	41.0	
175% 333% 175% 333% 142% 142% 350%	Total Split (s)	21.0	40.0	21.0	40.0	17.0	17.0	42.0	17.0	45.0	
16.0 33.0 16.0 33.0 12.0 12.0 12.0 35.0 12.0 3	Total Split (%)	17.5%	33.3%	17.5%	33.3%	14.2%	14.2%	35.0%	14.2%	35.0%	
30	Maximum Green (s)	16.0	33.0	16.0	33.0	12.0	12.0	35.0	12.0	35.0	
10 10 10 10 10 10 10 10	Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	
Signature Sign		2.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	
Signature Sign	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Lead	Total Lost Time (s)	5.0	7.0	5.0	7.0	5.0	2.0	7.0	5.0	7.0	
(s) Yes	Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	
(s) 50 50 50 50 50 50 50 50 50 50 50 50 50	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
See Sign S	Vehide Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
se (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
None None None None None C-Min	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
None None None None C-Min	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1.0 7.0	Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	
11.0	Walk Time (s)		7.0		7.0			7.0		7.0	
ary ary 19th: 120 Referenced to phase 2:NBTL and 6:SBT, Start of Green 10: Donval Road & Wyecroft Road 10: Donval Road & Wyecroft Road 11: Donval Road & Wyecroft Road 12: Start of Green 13: Start of Green 14: Start of Green 15: Start of Green 16: Start of Green 17: Start of Green 18: Start of Green 18: Start of Green 19: Start of Green 19: Start of Green 19: Start of Green 19: Start of Green 10: Start of	Flash Dont Walk (s)		11.0		11.0			27.0		27.0	
any Referenced to phase 2:NBTL and 6:SBT, Start of Green ated-Coordinated 10: Donval Road & Wyecroft Road	Pedestrian Calls (#/hr)		0		0			0		0	
Referenced to phase 2:NBTL and 6:SBT, Start of Green ated-Coordinated 10: Donval Road & Wyecroft Road	Intersection Summary										
To: Dorval Road & Wyecroft Road 10: Dorval Road & Wyecroft Road	Cycle Length: 120										
Referenced to phase 2:NBTL and 6:SBT, Start of Green aled-Coordinated 10: Donval Road & Wyecroft Road	Actuated Cycle Length: 120	_									
10: Donval Road & Wyerroft Road	Offset: 103 (86%), Reference	ced to phas	e 2:NBTI	and 6:SE	3T, Start	of Green					
10: Donval Road & Wyerroft Road	Natural Cycle: 90										
10: Donval Road & Wyecroft Road 10: Donval Road & Wyecroft Road 12:	Control Type: Actuated-Coo	ordinated									
42s (R) (40s) (R) (40s)		orval Road	& Wyear	oft Road							
42s 11s 40	•	2 (R)				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			104		
5	42 s					218		4	0.5		
3	1	(4)				1			*		
	•	6 (K)				2			000 h		

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Queues 10: Dorval Road & Wyecroft Road

Future Background PM Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Background PM Upper Kerr Village (8124-01)

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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	418	435	65	86	516	103	1418	120	1429	
v/c Ratio	0.98	0.57	0.23	0.46	0.88	0.41	0.80	0.18	0.63	
Control Delay	90.1	29.0	30.2	54.9	46.5	13.4	35.6	40.1	27.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	90.1	29.0	30.2	54.9	46.5	13.4	35.6	40.1	27.1	
Queue Length 50th (m)	51.2	29.4	11.0	21.9	88.8	8.2	129.3	11.8	88.3	
Queue Length 95th (m)	#82.7	44.2	19.5	36.3	123.3	m11.8 m#151.7	#151.7	20.5	124.5	
Internal Link Dist (m)		155.6		199.3			494.4		672.1	
Turn Bay Length (m)	115.0		145.0			65.0		125.0		
Base Capacity (vph)	428	1016	367	474	284	275	1765	229	2265	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.98	0.43	0.18	0.21	0.88	0.37	0.80	0.18	0.63	
Intomostion Cummons										

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

185 60 90 475 95 1265 40 110 1105 186 60 90 475 95 1265 40 110 1105 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 190 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100		\	†	<u> </u>	-	ļ	1	€	←	•	٠	→	*
figurations 7 (inclusions) 8 (inclusions) 8 (inclusi	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(inche(h)) 385 215 185 60 90 475 95 1265 40 110 (inche(h)) 385 215 185 60 90 475 95 1265 40 110 (inche(s)) 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 100 190	Lane Configurations	F	(F	+	*	F	4413		F	₩₽	
(u)mel (ph) 385 216 185 60 90 475 95 100 10	Traffic Volume (vph)	382	215	185	09	90	475	92	1265	40	110	1105	210
(victor) 1900	Future Volume (vph)	382	212	185	09	8	475	92	1265	40	110	1105	210
Fedor (pdf) 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Factor 0.97 0.95 1.00	Total Lost time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
Delivers 1,00 0.99 1,00 1,0	Lane Util. Factor	0.97	0.95		1.00	1.00	1.00	1.00	0.91		0.97	0.91	
ted 0.95 100 100 100 100 100 100 100 100 100 10	Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
ted (100 0.93 1.00 1.00 0.85 1.00 1.00 0.86 1.00 0.98 1.00 0.99 1.00 0.90 0.9	Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
lead	Fr	1.00	0.93		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
w (prot) 3213 3217 1783 1727 1590 1736 5040 3562 4964 w (prot) 3213 3217 1783 1727 1590 1785 5040 3562 4964 w (pem) 3213 3217 327 1500 257 5040 3562 4964 r (port) 418 224 201 65 98 516 103 1375 43 100 110 pub Flow (vph) 418 224 201 65 98 451 101 1175 43 100 110 pub Flow (vph) 418 224 20 0 0 0 0 0 0 0 100 110 141	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Lead O.95 1.00 O.49 1.00 0.14 1.00 0.95 1.00 O.49 1.00 O.14 1.00 O.95 0.92 O.95	Satd. Flow (prot)	3213	3217		1783	1727	1590	1736	5040		3502	4964	
March Marc	Flt Permitted	0.95	1.00		0.49	1.00	1.00	0.14	1.00		0.95	1.00	
ractor, PHF 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	3213	3217		927	1727	1590	257	5040		3502	4964	
(vph) 418 234 201 65 98 516 103 1375 43 120 1201 up Flow (vph) 48 244 0 6 6 6 6 6 6 6 6 6 14 1 14 1 14 1 14 1 14 1 14 1 1 14 1 14 1 1 1 1 14 1 <t< td=""><td>Peak-hour factor, PHF</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td><td>0.92</td></t<>	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
duction (vph) 0 147 0 0 55 0 0 18 duction (vph) 418 288 0 65 98 461 11 1 1 1 1 1s (HTM) 1 4 4 4 4 4 4 4 1 1 1 1 1s (HTM) 1 2 0	Adj. Flow (vph)	418	234	201	92	86	516	103	1375	43	120	1201	228
up Flow (vph) 418 288 0 65 98 461 103 1415 0 120 1411 side(Hr)1 1 4 4 4 4 4 4 1 1 side(Hr)1 1 4 4 4 4 4 7 4 7 1% 7 2% 2% 1% 1% cages (#Hr)1 0 2 0 <td>RTOR Reduction (vph)</td> <td>0</td> <td>147</td> <td>0</td> <td>0</td> <td>0</td> <td>22</td> <td>0</td> <td>က</td> <td>0</td> <td>0</td> <td>18</td> <td>0</td>	RTOR Reduction (vph)	0	147	0	0	0	22	0	က	0	0	18	0
15 (#Ihr)	Lane Group Flow (vph)	418	288	0	92	86	461	103	1415	0	120	1411	0
hides (%) 9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1% 1% 10% 1% 4% 2% 2% 0% 1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Confl. Peds. (#/hr)	_		4	4		~	_		_	~		_
eages (#Inh) 0 2 0 0 0 0 0 0 brases 7 4 pm+pt NA pm+pt NA prot Phases 7 4 pm+pt NA pm+pt NA prot Phases 7 4 pm 2 2 1 1 Phases 16 22.8 24.8 15.8 39.0 51.9 41.0 23.2 5 Green (3 (s)) 16.0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 5 Green (4 (s)) 16.0 22.8 15.8 15.9 50.0 <td>Heavy Vehides (%)</td> <td>%6</td> <td>4%</td> <td>2%</td> <td>1%</td> <td>10%</td> <td>1%</td> <td>4%</td> <td>2%</td> <td>2%</td> <td>%0</td> <td>1%</td> <td>2%</td>	Heavy Vehides (%)	%6	4%	2%	1%	10%	1%	4%	2%	2%	%0	1%	2%
Photaese T 4 9 m+pt NA pm+or pm+pt NA Pmosese T 4 8 15 8 39 6 519 410 23.2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
Phases 7 4 3 8 1 5 2 1 Phases 7 4 8 3 8 1 5 2 1 Phases 1 6 2 2 8 1 Phases 1 6 0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 5 Green, G(s) 16.0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 5 Green, G(s) 16.0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 5 Freen, G(s) 16.0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 5 Freen, G(s) 16.0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 Freen, G(s) 16.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Turn Type	Prot	Ϋ́		pm+pt	¥	vo+mq	pm+pt	¥		Prot	ΑN	
Phases 8 8 2 2 2 2 2 2 2 2	Protected Phases	7	4		က	∞	_	2	2		~	9	
Green, G(s) 160 228 248 158 390 519 410 232 Green, G(s) 160 22.8 24.8 15.8 390 51.9 410 232 Green, G(s) 160 22.8 24.8 15.8 390 51.9 410 232 Green, G(s) 170 5.0 7.0 5.0 5.0 5.0 5.0 5.0 Attension (s) 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 Attension (s) 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 Attension (s) 5.0 7.0 5.0 5.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 7.0 5.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 7.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 7.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 5.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 5.0 5.0 Attension (s) 6.0 5.0 Att	Permitted Phases				∞		∞	2					
Green, g(s) 16.0 22.8 24.8 15.8 39.0 51.9 41.0 23.2 gCRRside 0.13 0.19 0.21 0.13 0.32 0.43 0.34 0.19 Adension(s) 5.0	Actuated Green, G (s)	16.0	22.8		24.8	15.8	39.0	51.9	41.0		23.2	53.3	
g(C Ratio 0.13 0.19 0.21 0.13 0.22 0.43 0.34 0.19 a Time (s) 5.0 7.0 5.0 7.0 5.0 7.0 5.0	Effective Green, g (s)	16.0	22.8		24.8	15.8	39.0	51.9	41.0		23.2	53.3	
Time (s) 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.	Actuated g/C Ratio	0.13	0.19		0.21	0.13	0.32	0.43	0.34		0.19	0.44	
Axension (s) 5.0 <t< td=""><td>Clearance Time (s)</td><td>2.0</td><td>7.0</td><td></td><td>2.0</td><td>7.0</td><td>2.0</td><td>2.0</td><td>7.0</td><td></td><td>2.0</td><td>7.0</td><td></td></t<>	Clearance Time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
Cap (vph) 428 (511 555 (227) 516 (245) 345 (772) 677 Port c0.13 (0.99) 0.02 (0.06) c0.17 (0.04) c0.28 0.03 Perm 0.99 (0.47) 0.25 (0.43) 0.89 (0.42) 0.82 0.18 Perm 0.98 (0.47) 0.25 (0.43) 0.89 (0.42) 0.82 0.18 Perm 0.98 (0.47) 0.25 (0.43) 0.89 (0.42) 0.82 0.18 Perm 0.98 (0.47) 0.25 (0.43) 0.85 (0.93) 0.25 0.40 An Factor 1.00 (1.00) 1.00 (1.00) 1.00 (0.75) 0.35 0.18 An Debay, AZ 3.74 (1.2 1.1) 1.71 (1.2 35.3) 4.07 0.3 Ferror D D E B D D LCS E D D E B D D Do Centrol Delay 41.2 HCM 2000 Level of Service D C D O Volume to Capacity ratio 1.20 (2.00) Sum of lost time (s) E D	Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Prot c0.13 0.09 0.02 0.06 c0.17 0.04 c0.28 0.03 Perm 0.98 0.47 0.03 0.12 0.14 0.12 Perm 0.98 0.47 0.05 0.12 0.14 0.12 Perm 0.98 0.47 0.25 0.4 0.12 0.14 Oracle Delay, d1 51.8 43.2 39.2 48.0 38.5 20.9 36.2 40.4 Oracle Delay, d2 37.4 1.2 1.1 2.7 186 1.4 2.7 0.3 Eavice F 0 D D F 80 D F 80 D 0.3 Eavice F 0 D Confort Delay C 86.4 54.6 54.6 54.6 Oracle Delay (s) E6.4 54.6 54.6 54.6 54.6 Oracle Delay (s) E6.4 54.6 54.6 54.6 54.6 54.6 Oracle Delay (s) E6.4 54.6 54.6 54.6 54.6 54.6 54.6 54.6 5	Lane Grp Cap (vph)	428	611		255	227	516	245	1722		229	2204	
Perm 0.98 0.47 0.25 0.43 0.81 0.14 0.18 0.18 0.18 0.19 0.47 0.25 0.43 0.89 0.42 0.82 0.18 0.18 0.15 0.18 0.18 0.15 0.18 0.18 0.15 0.18 0.18 0.15 0.18 0.19 0.10 0.10 0.10 0.75 0.90 1.00 0.10 0.10 0.10 0.75 0.90 1.00 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.15 0.10 0.10	v/s Ratio Prot	c0.13	0.09		0.02	90.0	c0.17	0.04	c0.28		0.03	0.28	
belay, d. 1	v/s Ratio Perm				0.03		0.12	0.14					
belay, d1 518 43.2 39.2 48.0 38.5 20.9 36.2 40.4 on Factor 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00	v/c Ratio	0.98	0.47		0.25	0.43	0.89	0.42	0.82		0.18	0.64	
on Factor 1.00	Uniform Delay, d1	21.8	43.2		39.5	48.0	38.5	20.9	36.2		40.4	25.9	
Ital Delay, dz 37.4 1.2 1.1 2.7 18.6 1.4 2.7 0.3	Progression Factor	0.1	1.00		1.00	1.00	1.00	0.75	0.90		1.00	1:00	
B8.2	Incremental Delay, d2	37.4	1.2		- !	7.7	18.6	1.4	7.7		0.3	1.4	
F D D D E B D D D D D D D D D D D D D D D	Delay (s)	89.2	44.4		40.3	20.7	57.1	17.2	35.3		40.7	27.3	
66.4 54.6 34.0 E	Level of Service	ш	Ω			□	ш	Ш	□		Ω	O	
A1.2 HCM 2000 Level of Service D 0.88 Sum of lost time (s) 24.0 2ation 83.0% ICU Level of Service E 15	Approach Delay (s)		66.4			54.6			34.0			28.4	
41.2 HCM 2000 Level of Service 0.88 0.8 120 0 Sum of lost time (s) zation 83.0% ICU Level of Service	Approach LOS		ш			Ω			O			O	
41.2 HCM 2000 Level of Service 0.88 Sum of lost time (s) 22 cation 83.0% ICU Level of Service	Intersection Summary												
Addity ratio 0.00 Sum of lost time (s) zation 83.0% ICU Level of Service 15	HCM 2000 Control Delay	- Her		41.2	Ĭ	CM 2000	Level of	Service		۵			
zation 8.30% ICU Level of Service	Activities Oxion court (a)	ratio		0.00	ō	oc go	(a) cmi# #			0 80			
15	Actuated Cycle Leftgitt (s)	_		83.0%	⊼ ⊆	SOLIO III.	t unite (s)			24.U			
c Critical and Groun	Analysis Period (min)			15	2					1			
	C. Criticall and Group												

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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P.(81)24(01)OPA Process\(\text{3. Analysis\(\text{01}\) - Synchro\FTPM\(\text{syn}\) BA Group - EFS

Future Total AM (Interim) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

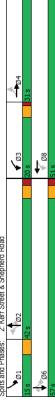
W S				J5 125	#		34 0.94							e.													.3 SB1 SB2	358 3	0	0	1700		0:0			0.00			
		44 4b					0.94 0.94							ne None													12 NB3	-	0 0		1700 1700		0.0 0.0	0.0 0.0					
- IBN			210 3		Ē		0.94							None				029		010	0.29	4.1	c	7:7	9,0	916	NB1 NB2		223		916 17		7.3		ם ס	0.0			
► RR	EBK	*	92	92			0.94	101										335		700	335	7.0	c	S. S.	8 2	658	EB2	101	0	101	658	0.15	4.1	11.5	מ				
, Œ	EBL	<u> </u>	2	2	Stop	%0	0.94	2										1236		0007	1236	9.9	c	0.0	8 5	130	EB 1	2	5	0	130	9.0	6.0	33.9	, 10 r	C.7)		
Movement	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	(F (S)	pu queue tree %	cM capacity (ven/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach LOS		Internation Commons	Intersection Summary

P.\81\2401\OPA Process\3. Analysis\01 - Synchro\FTAM\syn BA Group - EFS

Future Total AM (Interim) Upper Kerr Village (8124-01) Timings 2: Kerr Street & Shepherd Road

Lane Group EBI EBI WBI WBI NBI NBI SBI SBI SBI SBI SBI SBI Lane Group Lane Group Lane Group Lane Group Lane Group Lane Configurations La		1	†	-	Ļ	•	—	•	۶	→	*	
tions	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
(vph) 55 10 115 5 52 280 65 90 435 (vph) 55 10 115 5 52 280 65 90 435 (vph) 55 10 115 5 52 280 65 90 435 es 4 8 3 8 2 2 2 2 1 1 6 6 es 4 4 4 4 3 8 2 2 2 2 1 6 6 es 5 10 1 22.0 22.0 22.0 22.0 22.0 22.0 22.0	Lane Configurations	#	÷	F	¢	F	₩	*	je-	₩	*	
(vph) 55 10 115 5 280 65 90 435 es 4	Traffic Volume (vph)	55	9	115	ည	22	280	65	90	435	20	
Perm NA pm+pt NA Perm NA Perm pm+pt NA Perm	Future Volume (vph)	22	10	115	2	22	280	65	90	435	20	
es 4 3 8 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Turn Type	Perm	ΑĀ	pm+pt	Ϋ́	Perm	≨	Perm	pm+pt	₹	Perm	
(s) 5.0 5.0 5.0 18.0 18.0 18.0 7.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	Protected Phases		4	က	∞		2		_	9		
(s) 5.0 5.0 5.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	Permitted Phases	4		∞		2		2	9		9	
(a) 5.0 5.0 5.0 18.0 18.0 18.0 7.0 18.0 (b) (c) 5.0 5.0 5.0 18.0 18.0 18.0 7.0 18.0 (c) 5.0 5.0 5.0 18.0 18.0 18.0 7.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	Detector Phase	4	4	က	∞	2	2	2	Ψ.	9	9	
(s) 5.0 5.0 5.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	Switch Phase											
s) 220 220 90 220 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 282 110 282 282 282 282 282 282 282 282 282 28	Minimum Initial (s)	2.0	2.0	2.0	2.0	18.0	18.0	18.0	7.0	18.0	18.0	
310 310 20.0 51.0 42.0 42.0 42.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57.0 15.0 57	Minimum Split (s)	22.0	22.0	0.6	22.0	28.2	28.2	28.2	11.0	28.2	28.2	
n(s) 287% 287% 185% 472% 389% 389% 389% 139% 528% 53 n(s) 270 27.0 16.0 47.0 36.8 36.8 11.0 518 31 1.0 1.0 1.0 1.0 1.0 1.9 1.9 1.9 0.0 1.9 st (s) 4.0 4.0 4.0 5.2 5.2 5.2 4.0 5.2 lize? Yes	Total Split (s)	31.0	31.0	20.0	51.0	45.0	45.0	42.0	15.0	57.0	57.0	
270 270 160 470 368 368 110 518 13 10 10 10 10 10 10 10 10 10 10 10 10 10	Total Split (%)	28.7%	28.7%	18.5%	47.2%	38.9%	38.9%	38.9%	13.9%	52.8%	25.8%	
30 30 30 30 31 31 31 31 31 31 31 31 31 31 31 31 31	Maximum Green (s)	27.0	27.0	16.0	47.0	36.8	36.8	36.8	11.0	51.8	51.8	
1.0 1.0 1.0 1.0 1.9 1.9 1.9 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	4.0	3.3	3.3	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	1.0	1.0	1.0	1.0	1.9	1.9	1.9	0.0	1.9	1.9	
4.0 4.0 4.0 4.0 5.2 5.2 4.0 5.2 Lag	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lag Lead Lag Lag Lag Lag Lead Yes Yes Yes Yes Yes Yes Yes 3.0 3.0 3.0 3.5 3.5 2.5 3.0 3.0 3.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 None None None Min Min None Min 7.0 7.0 7.0 11.0 11.0 11.0 11.0 11.0 11.0 13.0 13.0 12.0 13.0 13.0 13.0 13.0 13.0 14.0 14.0 14.0 14.0 15.0 15.0 15.0 16.0 16.0 16.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	Total Lost Time (s)	4.0	4.0	4.0	4.0	5.2	5.2	5.2	4.0	5.2	5.2	
Yes Yes Yes Yes Yes Yes Yes Yes Yes 30 3.0 3.0 3.0 3.0 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lag	Lead			
30 30 30 30 35 35 35 35 35 35 35 35 35 35 35 35 35	Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes			
30 30 30 30 30 30 30 30 30 30 30 00 00 0	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.5	3.5	3.5	2.5	3.5	3.5	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
None None None Min Min Min None Min Non	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
None None None Min Min Min None Min 770 7.0 7.0 10.0 10.0 10.0 10.0 10.0 10	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7.0 7.0 7.0 10.0 10.0 10.0 10.0 10.0 10.	Recall Mode	None	None	None	None	Mi	Min	<u>W</u>	None	Mi	Min	
11.0 11.0 11.0 13.0 13.0 13.0 13.0 13.0	Walk Time (s)	7.0	7.0		7.0	10.0	10.0	10.0		10.0	10.0	
0 0 0 5 5 5 5 5 10 10 10 10 10 10 10 10 10 10 10 10 10	Flash Dont Walk (s)	11.0	11.0		11.0	13.0	13.0	13.0		13.0	13.0	
Intersection Summary Cycle Length: 108 Aduated Cycle Length: 57.1 Natural Cycle 275 Control Type: Semi Act-Unocord	Pedestrian Calls (#/hr)	0	0		0	2	2	2		2	2	
Oycle Length: 108 Aduated Oycle Length: 57.1 Natural Cycle: 75 Oontrol Type: Semi Act-Uncoord	Intersection Summary											
Actuated Cycle Length: 57.1 Natural Cycle: 75 Control Type: Semi Act-Uncoord	Cycle Length: 108											
Natural Cycle: 75 Control Type: Semi Act-Uncoord	Actuated Cycle Length: 57.1											
Control Type: Semi Act-Uncoord	Natural Cycle: 75											
	Control Type: Semi Act-Unco	poord										





Queues

Queues

2: Kerr Street & Shepherd Road

Upper Kerr Village (8124-01)

 Kerr Street & Shepherd Road 	epnera	Road							ddo	Upper Kerr VIIIage (6124-UT)
	1	†	>	ļ	•	←	•	۶	→	*
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	99	49	126	241	9	308	71	66	478	22
v/c Ratio	0.34	0.17	0.31	0.36	0.19	0.25	0.12	0.17	0.27	0.03
Control Delay	30.8	13.2	16.3	4.2	19.4	17.2	3.9	9.4	8.6	1.1
Queue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	13.2	16.3	4.2	19.4	17.2	3.9	9.4	8.6	1.1
Queue Length 50th (m)	0.9	[:	9.3	0.3	4.8	13.2	0.0	5.1	14.9	0.0
Queue Length 95th (m)	17.8	9.6	22.2	12.9	12.1	26.5	5.9	14.1	28.7	1.2
Internal Link Dist (m)		99.1		241.3		143.2			21.4	
Turn Bay Length (m)					20.0		20.0	20.0		20.0
Base Capacity (vph)	218	828	579	1317	265	2343	1028	029	3020	1371
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	90.0	0.22	0.18	0.10	0.13	0.07	0.15	0.16	0.02
Intersection Summary										

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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

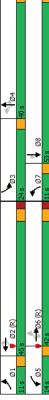
Future Total AM (Interim) Upper Kerr Village (8124-01)

	\	Ť	-	•	ļ	1	•	_	•	۶	→	*
Movement	BE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2		*	2		r	ŧ	*	F	‡	*-
Traffic Volume (vph)	22	10	35	115	2	215	22	280	65	90	435	8
Future Volume (vph)	22	10	32	112	2	212	22	780	65	6	435	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		5.2	2.5	5.2	4.0	2.5	5.2
Lane Util. Factor	9:1	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.97	1.00	1.00	1.00
Flpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Ft	1:00	0.88		1.00	0.85		1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1646		1668	1594		1770	3497	1498	1784	3505	1583
Flt Permitted	0.61	1.00		0.50	1.00		0.48	1.00	1.00	0.47	1.00	1.00
Satd. Flow (perm)	1134	1646		875	1594		892	3497	1498	882	3505	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.92	0.91	0.92	0.91	0.91	0.91	0.91	0.92
Adj. Flow (vph)	09	Ξ	38	126	2	236	09	308	71	8	478	22
RTOR Reduction (vph)	0	32	0	0	157	0	0	0	47	0	0	7
Lane Group Flow (vph)	09	17	0	126	84	0	09	308	24	66	478	1
Confl. Peds. (#/hr)				2		2			2	2		
Heavy Vehicles (%)	2%	5%	2%	%8	5%	%0	5%	5%	2%	1%	3%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	9	0	0	0	0
Turn Type	Perm	NA		pm+pt	¥		Perm	N N	Perm	pm+pt	NA	Perm
Protected Phases		4		က	∞			2		-	9	
Permitted Phases	4			80			2		2	9		9
Actuated Green, G (s)	8.8	8.8		19.6	19.6		20.2	20.2	20.2	29.8	29.8	29.8
Effective Green, g (s)	8.8	8.8		19.6	19.6		20.2	20.2	20.2	29.8	29.8	29.8
Actuated g/C Ratio	0.15	0.15		0.33	0.33		0.34	0.34	0.34	0.51	0.51	0.51
Clearance Time (s)	4.0	4.0		4.0	4.0		5.2	5.2	5.2	4.0	5.2	5.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5	3.5	2.5	3.5	3.5
Lane Grp Cap (vph)	170	247		384	533		307	1205	516	535	1782	802
v/s Ratio Prot		0.01		c0.04	0.05			0.09		0.02	00.14	
v/s Ratio Perm	0.05	000		c0.02	940		0.07	90.0	0.02	0.08	0	0.0
Uniform Delay d1	22.3	21.4		14.2	13.7		13.5	13.8	12.8	7.6	8.2	7.1
Progression Factor	1:00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.1		0.5	0.1		0.4	0.1	0.0	0.1	0.1	0.0
Delay (s)	23.6	21.5		14.7	13.8		13.9	13.9	12.8	7.8	8.3	7.1
Level of Service	ပ	ပ		ш	ш		ш	ш	ш	⋖	⋖	A
Approach Delay (s)		22.7			14.1			13.7			8.2	
Approach LOS		ပ			В			В			⋖	
Intersection Summary												
HCM 2000 Control Delay			12.3	ľ	:M 2000	HCM 2000 Level of Service	Service		m			
HCM 2000 Volume to Capacity ratio	scity ratio		0.34									
Actuated Cycle Length (s)			9.83	Su	Sum of lost time (s)	time (s)			17.2			
Intersection Capacity Utilization	ation		63.7%	⊇	J Level o	ICU Level of Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

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Future Total AM (Interim) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

-ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
-ane Configurations	<i>y</i> -	44	¥.	F	++	*	F	+	K.	1	+	W.
raffic Volume (vph)	82	705	82	195	220	185	100	130	370	365	175	82
uture Volume (vph)	82	705	82	195	220	182	100	130	370	365	175	85
Furn Type	pm+pt	Α̈́	Perm	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	Prot	₹	Perm
Protected Phases	_	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Detector Phase	~	9	9	2	7	7	7	4	4	က	∞	80
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Fotal Split (s)	11.0	42.0	45.0	14.0	42.0	45.0	11.0	40.0		24.0	53.0	53.0
Fotal Split (%)	9.2%	35.0%	35.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7		21.0	46.7	46.7
rellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3		3.0	3.3	3.3
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Fotal Lost Time (s)	3.0	5.9	5.9		5.9	5.9	3.0	6.3		3.0	6.3	6.3
-ead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
-ead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes		Yes	Yes	Yes
/ehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0		2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fime To Reduce (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Nalk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		15	15		35	35		32	35
ntersection Summary												
Sycle Length: 120												
Actuated Cycle Length: 120												
Offset 43 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	to phase	2:WBTL	and 6:EE	TL, Start	of Green							
Natural Cycle: 90												
Control Type: Actuated Coordinated	dinatad											



P.:81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

	4	†	1	-	↓	4	•	—	•	۶	-	•
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	66	820	66	227	640	215	116	151	430	424	203	8
v/c Ratio	0.28	0.71	0.18	92.0	0.49	0.30	0.28	0.34	0.91	0.81	0.33	0.17
Control Delay	16.4	32.1	4.2	38.7	31.3	5.1	20.5	38.4	50.5	61.2	30.0	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	32.1	4.2	38.7	31.3	5.1	20.5	38.4	50.5	61.2	30.0	5.3
Queue Length 50th (m)	7.9	98.4	1.4	32.7	64.3	0.0	14.5	28.2	61.5	49.7	33.4	0.0
Queue Length 95th (m)	17.0	117.9	5.3	#62.4	79.3	13.9	23.0	43.5	#102.1	63.0	47.9	9.2
Internal Link Dist (m)		145.3			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	361	1149	295	300	1317	202	412	217	521	583	718	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.71	0.18	92.0	0.49	0.30	0.28	0.29	0.83	0.73	0.28	0.15

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

ons ph) (ph) (ph) (b) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	H ► 88 8	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
=		**	¥.		*	٧)	
# ++++0		-		r	ŧ	_	<i>y</i> -	*	W_	1	*	*
# 4440		202	82	195	220	185	100	130	370	365	175	82
		705	82	195	220	182	100	130	370	365	175	82
(2)		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
		5.9	ري ي ي ک	3.0	9.5	5.5	3.0	6.3	6.3	3.0	6.3	6.3
		26.0	9.0	3 5	0.90	8.0	3 5	3 5	00.1	4 00.97	9.6	9. 0
		8.5	0.92	8.6	8.5	0.30	00.0	8.5	100	0.0	00.1	1 00
		8 8	0.00	8 6	8 8	28.0	8.0	8 6	0.00	8.0	8.0	0.00
		8 8	0.62	9. O	8.6	8.6	0.00	00.1	100	0.05	00.1	100
Satd Flow (prof) 180		378	14.37	1687	3438	1495	1676	1844	1429	3335	1845	1511
		100	100	0.17	100	8	0.63	100	100	0 95	100	100
erm)		3378	1437	303	3438	1495	1112	1844	1429	3335	1845	1511
PHF		0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
		820	66	227	640	215	116	151	430	424	203	66
RTOR Reduction (vph)	0	0	92	0	0	133	0	0	127	0	0	99
(hdv		820	¥	227	640	85	116	151	303	424	203	33
	15		9	9		15	8		35	32		20
	%0	%9	%/	%/	2%	4%	%9	1%	2%	2%	3%	5%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	2	0	0	0	
Type pm+pt	+pt		Perm	pm+pt	AA	Perm	pm+pt	Ν	Perm	Prot	¥	Perm
Protected Phases	_	9		2	7		7	4		က	∞	
			9	2		2	4		4			ω
_		40.9	40.9	9:99	46.0	46.0	37.0	29.1	29.1	18.9	40.1	40.1
s)		6.0	40.9	26.8	46.0	46.0	37.0	29.1	29.1	18.9	40.1	40.1
0		0.34	0.34	0.47	0.38	0.38	0.31	0.24	0.24	0.16	0.33	0.33
	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
/ehicle Extension (s) 2	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
(hdh)		1151	489	292	1317	573	379	447	346	525	616	504
		0.24		0.08	0.19		0.02	0.08		c0.13	0.11	
Perm			0.02	c0.28		90.0	0.07		c0.21			0.02
		0.71	0.07	0.78	0.49	0.14	0.31	0.34	0.88	0.81	0.33	0.02
Jniform Delay, d1 22		34.4	26.7	22.5	28.0	24.1	30.8	37.5	43.7	48.8	29.9	27.2
_		0.78	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ncremental Delay, d2 0	0.3	3.7	0.3	11.8	د .	0.5	0.3	9.0	21.8	9.8	0.4	0.1
Jelay (s) 17	7.8	30.7	21.6	34.2	29.3	24.7	31.2	38.1	65.5	57.4	30.3	27.3
evel of Service	മ	ပ	ပ	ပ	ပ	ပ	ပ	_	ш	ш	ပ	O
Approach Delay (s)	. 1	28.5			29.4			53.9			45.7	
Approach LOS		ပ			O			Ω			Ω	
ntersection Summary												
HCM 2000 Control Delay			37.4	 	HCM 2000 Level of Service	evel of	Service		۵			
HCM 2000 Volume to Capacity ratio	.0.		0.83									
Actuated Cycle Length (s)			120.0	Su	Sum of lost time (s)	time (s)			18.2			
ntersection Capacity Utilization		7	73.5%	ਹ	ICU Level of Service	f Service			Ω			
Analysis Period (min)			15									

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Future Total AM (Interim) Upper Kerr Village (8124-01) Timings 4: Dorval Road & Speers Road

	4	†	<i>></i>	-	ţ	4	•	←	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	<u> </u>	₩	*	F	₩	R _	F	4₽	_	₩	¥C	
Traffic Volume (vph)	415	290	40	82	395	310	2	825	265	515	255	
Future Volume (vph)	415	290	40	82	395	310	70	825	265	515	255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	≨	vo+mq	pm+pt	₹	pm+pt	¥	Perm	
Protected Phases	7	4		က	∞	_	2	2	-	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	~	2	2	τ-	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0	13.0	45.0		11.0	45.0		46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	\rightleftharpoons	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0		7.0	38.0		39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0		1.0	3.0		3.0	3.0	
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)	4.0	7.0	7.0	4.0	7.0		4.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0		
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB	TL, Start o	of Green							
Natural Cycle: 125												
Control Type: Actuated-Coordinated	rdinated											

Splits and Phases: 4: Dorval Road & Speers Road

25	to a	
*	13 s 50 s	
05 (K)	→ 07	80
11s 46s	218	42 s

P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

4: Dorval Road & Speers Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

759 0 0 0.36

0.93

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

0.53

85.0 259 0 0 0 0.36

0.00

0.54 1192

0.94

10.0

396

55.0 639

60.0

vic Ratio
Control Delay
Queue Delay
Queue Length 50th (m)
Queue Length 55th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Base Capacity (vph)
Siarvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Reduced vic Ratio

277 0.36 2.9 0.0 2.9 9.5 14.3

560 0.37 10.3 10.3 33.3 42.1 494.4

288 0.91 58.2 0.0 58.2 28.5 #134.9

1038 0.93 54.8 0.0 54.8 123.0 #163.8

337 0.53 11.0 0.0 11.0 2.6 39.1

WBT 429 0.64 37.1 37.1 34.1 44.3 472.1

92 0.37 19.0 0.0 19.0 7.0 8.9

0.09 0.3 0.3 0.0 0.0

641 0.69 42.5 0.0 42.5 72.6 80.6 412.3

451 0.94 79.4 0.0 79.4 54.8 #85.1

Lane Group Flow (vph)

Future Total AM (Interim) Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

	1	†	1	-	ţ	4	•	←	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	‡	¥C	, -	‡	¥C	r	₩		<u></u>	‡	*
Traffic Volume (vph)	415	290	40	82	395	310	02	825	130	265	515	255
Future Volume (vph)	415	290	40	82	395	310	02	825	130	265	515	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	2.0		4.0	7.0	7.0
Lane Utill. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	0.1	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	0.1	00.1	00.1	00.1	00.1	00.1	00.1	00.1		00.1	00.1	00.1
Fit	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		9.1	9.5	0.82
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3400	3329	1482	1656	3256	1495	1785	3476		1687	3539	1417
Flt Permitted	0.95	1.00	1.00	0.33	1.00	1.00	0.44	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3400	3329	1482	583	3256	1495	831	3476		169	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	641	43	92	429	337	9/	897	141	288	260	277
RTOR Reduction (vph)	0	0	31	0	0	20	0	10	0	0	0	162
Lane Group Flow (vph)	451	14	12	92	429	267	9/	1028	0	288	260	115
Confl. Peds. (#/hr)	2					2	2					5
Heavy Vehicles (%)	3%	%8	%6	%6	10%	%2	1%	2%	%0	%/	2%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	¥	Perm	pm+pt	≨	vo+ma	pm+pt	≨		pm+pt	¥	Pem
Protected Phases	7	4		က	8	-	2	2		τ-	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.0	33.3	33.3	33.3	24.8	43.0	44.2	38.0		60.2	20.0	50.0
Effective Green, g (s)	17.0	33.3	33.3	33.3	24.8	43.0	44.2	38.0		60.2	20.0	50.0
Actuated g/C Ratio	0.14	0.28	0.28	0.28	0.21	0.36	0.37	0.32		0.50	0.42	0.42
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	481	923	411	237	672	535	355	1100		315	1474	290
v/s Ratio Prot	c0.13	c0.19		0.03	0.13	0.08	0.01	0.30		00.14	0.16	
v/s Ratio Perm			0.01	0.08		0.10	0.07			00.32		0.08
v/c Ratio	0.94	0.69	0.03	0.39	0.64	0.50	0.21	0.93		0.91	0.38	0.20
Uniform Delay, d1	21.0	38.8	31.6	33.3	43.5	30.1	25.0	39.8		35.0	24.3	22.2
Progression Factor	1.00	1.00	1.00	0.70	0.77	0.47	1.00	1.00		1.01	0.38	0.56
Incremental Delay, d2	26.0	2.9	0.1	1.0	2.7	0.7	0.3	15.3		23.9	9.0	9.0
Delay (s)	76.9	41.7	31.6	24.2	36.1	14.7	25.3	55.1		59.5	9.7	12.9
Level of Service	ш		O	O		В	O	ш		ш	⋖	В
Approach Delay (s)		55.3			26.4			53.1			23.2	
Approach LOS		ш			O			۵			ပ	
Intersection Summary												
HCM 2000 Control Delay			40.3	Ī	CM 2000	HCM 2000 Level of Service	Service					
HCM 2000 Volume to Capacity ratio	city ratio		0.30									
Actuated Cycle Length (s)			120.0	Ō	Sum of lost time (s)	t time (s)			22.0			
Intersection Capacity Utilization	tion		85.5%	⊇	U Level	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												
												ı

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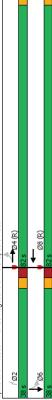
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Timings Future Total AM (Interim) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

5: St. Augustine Drive & Speers Road	/e & Sp	seers F	Road		Upp	Upper Kerr Village (8124-01)
	4	†	ţ	•		
ana Groun	ä	FRT	WRT	ARN GRAN	9	
Caro Confoundions	4	*	*	*		
Traffic Volume (vph)	- 12	870	825	20		
Future Volume (vph)	2	870	825	20		
Turn Type	Perm	ΑN	ΑΝ	Perm		
Protected Phases		4	∞		9	
Permitted Phases	4			2		
Detector Phase	4	4	∞	7		
Switch Phase	L	C L	C	c	C L	
Minimum Initial (s)	0.0	0.0	0.0	0.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	
Total Split (s)	82.0	82.0	82.0	38.0	38.0	
Total Split (%)	68.3%	68.3%	68.3%	31.7%	32%	
Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.9	6.3		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	C-Min	C-Min	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	to phase	4:EBTL	and 8:WB	T, Start of	Green	
Control Type: Actuated-Coordinated	Jinated					
collider type: Actuated-cook	ni iaich					





P.\81\2401\0PA Process\3, Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Queues	5: St. Augustine Drive & Speers Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

	1	†	Ļ	•	
Lane Group	EBF	EBT	WBT	NBR	
Lane Group Flow (vph)	9	1006	922	23	
v/c Ratio	0.01	0.32	0.31	0.11	
Control Delay	1.6	1.4	4.8	1.1	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	1.6	4.	4.8	1.	
Queue Length 50th (m)	0.2	15.8	61.5	0.0	
Queue Length 95th (m)	m0.3	m19.8	55.9	0.0	
Internal Link Dist (m)		472.1	42.5		
Turn Bay Length (m)	20.0				
Base Capacity (vph)	516	3124	3123	514	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.01	0.32	0.31	0.04	
Intersection Summary					
m Volume for 95th percentile queue is metered by upstream signal	tile guerre	s metered	by upstr	am signal.	
	الله طححح		and ale		

P.181/24(01/OPA Process)3. Analysis\01 - SynchrolFTAM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

Management EBL EBT EBR WBL WBI	WBL WBT WB	MBR NBL 15 0 1900 1900 1900 1900 0 0 0 0 0 0 5 5 5 0%	NBT NBR 0 20 0 20 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	33 3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	00 1900 1900 00 0 0 0 0 0 0 0 0 0 0 0 0
↑ ↑↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	0 825 0 825 0 825 1900 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00				
5 870 15 0 1900 1900 1900 1900 1900 1 5.9 5.9 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1900 825 1900 1900 5.9 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.				
1900 1900	1900 825 1900 1900 5.9 0.95 1.00 1.00 1.00 3.427 1.00 3.427 0.08 0 0 0 938 0 0 955 5 5 6 7,000 1				
1900 1900 1900 1900 1100 1100 1100 1100	1900 1900 1900 1900 1900 1900 1900 1000 1				
5.9 5.9 1.00 0.98 1.00 1.00 1.00 1.00 1.	0.59 1.00 1.00 1.00 1.00 1.00 3.427 0.08 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
100 0.95 1.00 1.	0.95 1.00 1.00 1.00 1.00 1.00 3.427 1.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.				
100 100 100 100 100 100 100 100 100 100	100 100 100 100 100 3427 100 3427 0 0 0 988 0 0 988 0 0 988 0 0 888 0 0 0 0	0			
100 100 100 100 100 100 100 100 100 100	1.00 1.00 1.00 1.00 3.427 0.88 0.88 0 0 0 0 0 955 5 5% NA				
100 100 100 100 1000 1000 1000 1000 10	100 100 3427 100 3427 0.88 0.88 0 0 0 0 0 0 0 0 0 5 5% 0 856 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	8			
177 3430 1787 3430 1797 3430 1797 3430 1708 1088 1088 1088 170 0 0 0 170 0 0 0 171 0 0 0 170 0 0 0 17	1,00 3427 1,00 0,088 0,088 0,098 0,0				
1797 3430 0.00 1.00 566 3430 566 3430 6 989 17 0 0 0 0 0	3427 1.00 1.00 3427 0.88 0 938 0 0 955 5 5% NA NA	0			
F 0.36 0.40 0.4	1,00 3427 0,88 0,938 0 0 0 0 0 0 0 955 5 0% 5% 8 8	8	,		
566 3430 88 0 38 0 34 0 34 0 0 4 0 4 0 4 0 4 0 4 0 4 0 4	3427 0.88 0.88 0 0 0 0 0 0 0 955 5 5% 0% 8%	0	`		
HF 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.8	0.88 0.88 0.98 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0			
h) 6 989 17 0 9 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0 0 %		P	Peri	0 %0
ht) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 %			Peri	0 %0
by) 6 1006 0 0 9 6 6 0 0 0 0 0 0 0 0 0 0 0 0 0	0 2 %			Peri	0 %0 9
5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	0%			ď	%0
0% 5% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	%0			٩	%0
s) 104.5 104.5 10 104.5 104.5 10 0.04.5 0.04.5 10 0.07 0.87 0.87 0.0 5.9 5.9 5.9 5.9 5.9 5.9 6.0 0.01 0.34 0.0 1.14 0.95 3 0.0 0.2 0.0 0.2 0.0 1.2 1.6 A A A A A A A A A A A A A A A A A A A	NA 8 rs		Pern		9
5) 104.5 104.5 10 104.5 104.5 10 0.87 0.87 0 5.9 5.9 0 3.0 3.0 3.0 492 2986 23 0.01 0.34 0 0.01 0.34 0 1.14 0.95 3 2 0.0 0.2 1.2 1.6 A A A A A A A A A A A A A	ω				9
5) 1045 104,5 1045 0.87 0.87 0.87 0.87 5.9 5.9 5.0 3.0 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.03 1.14 1.14 0.95 0.0 0.0 1.2 1.6 A A A A A A A A A A A A A A A A A A A	1 10				
s) 104.5 104.5 104.5 104.5 0.87 0.87 5.9 5.9 3.0 3.0 492 2986 6.029 0.01 0.34 1.0 1.4 1.0 1.4 1.4 0.95 2 0.0 0.2 A A A A A A A A A A A A A A A A A A A	1707		. •	2 6	
104.5 104.5 104.5 104.5 104.5 104.5 104.5 104.5 108.7 108.7 109.5	0.40		3.3	3	
0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87	104.5		3.3	3	
5.9 5.9 4.92 2386 5.9 0.01 0.34 1.0 1.4 1.2 0.95 2 0.0 0.2 1.6 1.6 A A A A A A A A A A A A A A A A A A A	28.0		0.03	3	
30 3.0 492 2986 2 0.01 0.01 0.34 1.14 0.95 2 0.0 0.2 1 1.6 1.6 A A A A A A A A A A A A A A A A A A A	5.9		6.3	က	
492 2986 2 0.02 0.029 0.01 0.34 1.10 1.4 1.14 0.95 0.0 0.0 1.2 1.6 A A A A A A A A A A A A A A A A A A A	3.0		3.0	0	
0.01 0.01 0.01 0.34 1.0 1.4 1.14 0.95 0.0 0.2 1.2 1.6 A A A A A A A A A A A A A A A A A A A	2984		43	3	
0.01 0.01 1.0 1.4 1.14 0.95 0.0 0.2 1.6 1.6 A A A A A A A A A A A A A A A A A A A	0.28				
0.01 0.34 1.0 1.4 1.14 0.95 2 0.0 0.2 A A A A A A A A A A A A A A A A A A A			00:00	0	
1.0 1.4 1.14 0.95 2 0.0 0.2 1.2 1.6 A A A 1.6	0.32		0.01	_	
1.14 0.95 0.0 0.2 1.2 1.6 A A A 1.6 1.6	1.4		56.8	~	
2 0.0 0.2 1.2 1.6 A A 1.6 A A A	3.62		1.00	0	
1.2 1.6 A A A 1.6 1.6 A	0.3		0.1	_	
A 1.6	5.3		56.9	6	
1.6 A	A		ш	ш	
A	5.3		56.9		0.0
	A		ш		V
Intersection Summary					
lav 4.0	4.0 HCM 2000 Level of Service	of Service	1	⋖	
pacity ratio 0.33					
120.0	20.0 Sum of lost time (s)	(s)	12.2	2	
Intersection Capacity Utilization 38.9% ICU Lev		rvice	1	A	
Analysis Period (min)	15				
2	2				

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Timings
Future Total AM (Interim)
6: Speers Road/Cornwall Road & Cross Avenue

	١	Ť	,	*	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Configurations	*	‡	₩.	F	R. R	
Traffic Volume (vph)	202	1230	615	2	245	
Future Volume (vph)	202	1230	615	2	245	
Turn Type	pm+pt	NA	Ν	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	4	4	
Switch Phase						
Minimum Initial (s)	0.9	38.0	38.0	10.0	10.0	
Minimum Split (s)	12.0	47.6	47.6	15.8	15.8	
Total Split (s)	35.0	109.0	74.0	31.0	31.0	
Total Split (%)	25.0%	%6.77	52.9%	22.1%	22.1%	
Maximum Green (s)	29.0	102.4	67.4	25.2	25.2	
Yellow Time (s)	4.0	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.0	2.9	2.9	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9	9.9	9.9	5.8	5.8	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehide Extension (s)	3.5	2.0	2.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min	C-Min	None	None	
Walk Time (s)		10.0	10.0			
Flash Dont Walk (s)		31.0	31.0			
Pedestrian Calls (#/hr)		2	2			
Intersection Summary						
Cycle Length: 140						
Actuated Cycle Length: 140						
Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	ed to phase	2:EBTL	and 6:WB	T, Start o	f Green	
Natural Cycle: 80						
Control Type: Actuated-Coordinated	ordinated					
Splits and Phases: 6: Spe	6: Speers Road/Cornwall Road & Cross Avenue	ornwall	Road & C	ross Aver	ent	
					,	

74s

↑ Ø6 (R)

♣ø2 (R) 109 s ►ø5 P.\81\24\01\0PA Process\3. Analysis\01 - SynchrolFTAM.syn BA Group - EFS

Future Total AM (Inf	s Avenue Upper Kerr Village (8
Queues	6: Speers Road/Cornwall Road & Cross

Queues 6: Speers Road/Cornwall Road & Cross Avenue	mwall F	Road &	Cross	Aven	er.	Future Total AM (Interim) Upper Kerr Village (8124-01)
	1	†	ţ	٠	*	
Lane Group	EBL	B	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1447	748	9	288	
v/c Ratio	0.42	0.50	0:30	0.05	0.63	
Control Delay	4.4	3.9	7.3	9.09	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.4	3.9	7.3	9.09	12.9	
Queue Length 50th (m)	9.4	45.2	33.8	1.6	0.0	
Queue Length 95th (m)	14.5	54.0	44.0	2.7	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	723	2905	2501	324	202	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.50	0.30	0.02	0.41	
Intersection Summary						

Synchro 11 Report Page 15

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

l Signalized Intersection Capacity Analysis	ers Road/Cornwall Road & Cross Avenue
HCM Signalize	6: Speers Roa

Future Total AM (Interim) Upper Kerr Village (8124-01)

FBL EBT WBT WBR SBL CD6			٠					
206 1230 615 20 5 245 206 1230 615 20 5 245 206 1230 615 20 5 245 1300 1900 1900 1900 1900 1900 1 00 0.95 0.95 1.00 0.88 1 100 1.00 1.00 1.00 1.00 0.85 1 100 1.00 1.00 0.95 1.00 1 100 1.00 1.00 0.95 1.00 1 100 1.00 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.95 1.00 1 100 1.00 0.90 0.00 1 100 1.00 0.00 1 100 1.00 0.00 1 100 1.00 0.00 1 100 1.00 0.00 1 100 1.00 0.00 1 1	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
1230 615 20 5 245 1230 615 20 5 245 1200 1900 1900 1900 1900 6 6 6 6 6 5 28 58 100 1.00 1.00 0.88 1.00 1.00 1.00 0.88 1.00 1.00 1.00 0.85 1.00 1.00 1.00 0.85 1.00 1.00 1.00 0.85 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Configurations	<i>y-</i>	‡	₩		y -	¥.	
205 1230 615 20 5 245 100 1900 1900 1900 1900 1900 6 6 6 6 6 6 5 8 100 1 00 1.00 1.00 1.00 1.00 1.00 1 00 1.00 1.	Traffic Volume (vph)	202	1230	615	20	ည	245	
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	202	1230	615	20	2	245	
100 0.35 0.36 0.58 5.8 1.00 0.38 1.00 1.	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
1.00 0.95 0.95 1.00 0.88 1.00 1.00 1.00 1.00 1.00 1.00	Total Lost time (s)	0.9	9.9	9.9		2.8	2.8	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	1:00	0.95	0.95		1.00	0.88	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Frpb, ped/bikes	1:00	1.00	1.00		1.00	1.00	
1.00 1.00 1.00 0.85 0.95 1.00 1.00 0.95 1.08 0.450 1.00 0.95 1.00 1.08 0.33 1.00 1.00 0.95 1.00 0.38 1.00 1.00 0.95 1.00 0.85 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.87 1.447 724 24 6 2.88 0.08 0.86 0.86 0.86 0.86 0.09 0.00	Flpb, ped/bikes	1:00	1.00	1.00		1.00	1.00	
1686 3170 1.00 0.95 1.00 1686 3170 1.00 0.95 1.00 0.33 1.00 1.00 0.95 1.00 0.85 0.85 0.85 0.85 0.85 0.85 241 1447 724 24 6 288 241 1447 724 24 6 288 241 1447 747 0 6 2.1 5 4% 4% 5% 0% 9% 172 172 101.5 10.4 10.4 172 172 101.5 10.4 10.4 172 172 101.5 10.4 10.4 172 2 17.2 101.5 10.4 10.4 172 172 101.5 10.4 10.4 172 172 101.5 10.4 10.4 172 172 101.5 10.0 0.0 0.34 0.84 0.72 0.07 0.07 6 6 6 6 6 8 5 8 8 6 1.00 200 2.50 0.30 0.04 0.11 2.8 3.2 6.8 0.03 0.01 0.0 0.32 0.42 0.22 0.00 0.32 0.42 0.20 0.00 0.33 0.42 0.20 0.00 0.42 0.50 0.30 0.01 0.0 0.44 0.10 1.00 1.00 1.00 0.56 0.6 0.3 0.1 0.3 2.8 3.7 1 6.0.7 A A A A A B HCM 2000 Level of Service 2.9 Sum of lost time (s) 1ilization 69.2% 1.0.1 U.b.vel of Service	Ŧ	1:00	1.00	1.00		1.00	0.85	
1686 3471 3450 1805 2608 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 241 1447 724 24 6 288 0 0 0 1 0 0 267 241 1447 774 0 6 21 5 14, 447 747 0 6 21 7% 4% 4% 5% 0% 9% 1172 1172 1172 1015 1104 104 1172 1172 1015 1104 104 1172 1172 1015 1104 104 1172 1172 1015 1004 0.07 0.03 0.04 0.02 0.00 0.03 0.04 0.01 0.04 0.01 0.01 0.05 0.03 0.04 0.11 2 8 3.2 68 60 65 1.00 1.00 1.00 1.00 1.00 0.03 0.04 0.11 2 8 7.1 60.3 60.7 A A A A B A B B COLD Level of Service 3 7 7.1 60.7 A A A A B B COLD Cold Cold o.10 0.05 0.05 0.00 0.00 0.06 0.06 0.05 0.00 0.07 0.00 0.00 0.08 0.09 0.00 0.09 0.00 0.00 0.09 0.00 0.00	Fit Protected	0.95	1.00	1.00		0.95	1.00	
9.33 1.00 1.00 0.95 1.00 591 3471 3450 0.85 1.00 0.85 0.85 0.85 0.85 0.85 0.85 241 1447 724 24 6 288 241 1447 724 24 6 288 241 1447 724 0 6 211 5 4 4% 5% 0% 9% 172 1412 1015 104 104 1412 1412 1015 104 104 1412 1412 1015 104 104 1412 1412 1015 104 104 1412 1412 1015 104 104 1412 1412 1015 104 104 142 0.84 0.84 0.84 0.84 0.81 0.03 0.04 0.11 2.8 3.2 6 6.6 5.8 5.8 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.11 2.8 3.2 6 0.03 0.04 0.10 0.03 0.04 0.10 0.04 0.10 0.100 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (prot)	1686	3471	3450		1805	2608	
0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86	Flt Permitted	0.33	1.00	1.00		0.95	1.00	
0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Satd. Flow (perm)	8	047	3430		cno	2000	
241 1447 747 0 6 288 241 1447 747 0 6 267 5 4% 4% 5% 0% 9% 7% 4% 4% 5% 0% 9% Pm+pt NA NA Prot Perm 5 2 6 4 4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 101.5 10.4 10.4 1172 10.5 0.00 0.03 0.042 0.02 0.03 0.042 0.02 0.03 0.042 0.02 0.03 0.042 0.02 0.03 0.042 0.03 0.03 0.042 0.03 0.03 0.042 0.03 0.03 0.042 0.03 0.03 0.042 0.03 0.03 0.042 0.03 0.03 0.042 0.03 0.03 0.042 0.01 0.040 0.01	Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
Punter Name	Adj. Flow (vph)	741	1447	1.24	74	ه م	788	
144	RI OR Reduction (vpn)	2 50	0 !	- !	> 0	o 0	/07	
Power Proof Permit	Lane Group Flow (vpn)	747	144/	/4/	O 1	٥	1.7	
pm+pt 7% 4% 5% 0% 9% pm+pt NA NA Prot Perm 2 6 6 4 4 1172 10.5 10.4 10.4 1172 10.5 10.4 10.4 1172 10.5 10.4 10.4 0.84 0.84 0.72 0.07 0.03 5.0 5.0 3.0 5.0 5.0 5.0 3.0 0.32 0.02 0.00 0.01 0.32 0.22 0.00 0.33 0.22 0.00 0.34 0.5 0.3 0.01 0.33 0.6 0.6 0.0 0.0 1.00 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Confl. Peds. (#/hr)	Ω			သ			
pm+pt NA NA Prot Perm 5 2 6 4 4 4 4 4 4 4 1772 1772 101.5 10.4 10.4 10.4 10.4 1772 1772 101.5 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4	Heavy Vehides (%)	%/	4%	4%	2%	%0	%6	
5 2 6 4 1172 1772 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 10.84 0.75 0.07 0.07 6.0 6.6 6.6 5.8 5.8 5.8 3.5 5.0 5.0 3.0 3.0 3.0 0.03 0.04 0.11 0.42 0.50 0.30 0.04 0.11 0.42 0.50 0.30 0.04 0.11 0.42 0.50 0.30 0.04 0.11 0.42 0.50 0.30 0.04 0.11 0.43 7.1 60.3 60.7 A A A B E E A A A A B HCM 2000 Level of Service 1(8) 140.0 Sum of lost time (s) 1(8) 140.0 Sum of lost time (s)	Turn Type	pm+pt	Ν	Ϋ́		Prot	Perm	
1172 117.2 101.5 10.4 10.4 10.4 1172 117.2 101.5 10.4 10.4 10.4 10.4 0.84 0.84 0.72 0.07 0.07 0.07 0.07 0.07 0.07 0.07	Protected Phases	2	2	9		4		
1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 0.84 0.84 0.75 0.70 0.07 6.0 6.6 6.6 5.8 5.8 5.8 3.5 5.0 5.0 3.0 3.0 0.03 c.04 0.22 0.00 0.32 c.04 0.22 0.00 0.32 c.04 0.22 0.00 0.32 c.04 0.22 0.00 1.00 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.01 0.0 1.00 1.00 1.00 1.00 1.00 1.00	Permitted Phases	2					4	
1172 117.2 101.5 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4	Actuated Green, G (s)	117.2	117.2	101.5		10.4	10.4	
0.84 0.84 0.72 0.07 0.07 0.07 0.07 0.06 0.06 0.06 0.07 0.07	Effective Green, g (s)	117.2	117.2	101.5		10.4	10.4	
Section	Actuated g/C Ratio	0.84	0.84	0.72		0.07	0.07	
35 50 50 3.0 3.0 570 2905 2501 134 193 0.03 0.042 0.02 0.00 0.32 0.32 0.30 0.01 0.42 0.50 0.30 0.04 0.11 2.8 6.8 6.0.5 6.0.5 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 3.4 3.8 7.1 60.7 A A A A A A A A A A A A A A A A A A	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
570 2905 2501 134 193 0.03 co.42 0.22 0.00 0.32 0.02 0.01 0.42 0.50 0.30 0.04 2.8 3.2 6.8 60.5 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 1.0 1.0 1.0 0.0 0.3 1.0 1.0 1.0 0.0 0.7 0.7 1.0 3.7 7.1 60.7 6.7 6.7 A A A A E E E A A A A B A A A A A A A B A A A B A A B A A B A A B B A A B B A A B B A	Vehicle Extension (s)	3.5	2.0	2.0		3.0	3.0	
0.32	Lane Grp Cap (vph)	220	2905	2501		134	193	
0,32 co.01 0,42 0,50 0,30 0.04 0,11 2,8 3,2 6,8 60,2 60,5 1,00 1,00 1,00 1,00 1,00 2,6 0,8 0,3 0,1 0,3 3,4 3,8 7,1 60,3 60,7 A A A A E E A 3,7 7,1 60,7 A A A A B HCM 2000 Level of Service (Capacity ratio 0,49 CDU Level of Service 1,40,0 Sum of lost time (s) Utilization 6,9,2% CDU Level of Service	v/s Ratio Prot	0.03	c0.42	0.22		0.00		
0.42 0.50 0.30 0.04 0.11 2.8 3.2 6.8 60.5 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 3.4 3.8 7.1 60.7 A A B E E A A A B HCM 2000 Level of Service Capacity ratio 0.49 Utilization 6.92% CU Level of Service	v/s Ratio Perm	0.32					c0.01	
2.8 3.2 6.8 60.2 60.5 1.00 1.00 1.00 1.00 0.06 0.3 0.1 0.3 3.4 3.8 7.1 60.3 60.7 A A A E E E 3.7 7.1 60.7 A A A HCM 2000 Level of Service Capacity ratio 0.49 Utilization 6.9.2% CU Level of Service	v/c Ratio	0.42	0.50	0.30		0.04	0.11	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	2.8	3.2	8.9		60.2	60.5	
9 06 0.6 0.3 0.1 0.3 3.4 3.8 7.1 60.3 60.7 A A A E E A 3.7 7.1 60.7 A A B E Capacity ratio 0.49 Utilization 69.2% CU Level of Service	Progression Factor	1:00	1.00	1.00		1.00	1.00	
3.4 3.8 7.1 60.3 60.7 A A A E E 3.7 7.1 60.7 A A A E Construction A A A B B HCM 2000 Level of Service Capacity ratio 0.49 Sum of lost time (s) Utilization 69.2% ICU Level of Service	Incremental Delay, d2	9.0	9.0	0.3		0.1	0.3	
A A A E E E 3.7 7.1 60.7 A A A E E 60.7 A A A E Compactive and the service of Servi	Delay (s)	3.4	3.8	7.1		60.3	2.09	
3.7 7.1 60.7 A A E E I A A E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B E I A B B E I A B B B B B B B B B B B B B B B B B B	Level of Service	∢	∢	⋖		ш	ш	
A A E // Capacity ratio 0.49 HCM 2000 Level of Service 140.0 Sum of lost time (s) 140.0 Sum of lost t	Approach Delay (s)		3.7	7.1		2.09		
10.8 HCM 2000 Level of Service Capacity ratio 0.49 Sum of lost time (s) h (s) 140.0 Sum of lost time (s) Utilization 69.2% ICU Level of Service	Approach LOS		⋖	∢		ш		
10.8 HCM 2000 Level of Service Capacity ratio 0.49 Sum of lost time (s) 140.0 Sum of lost time (s) Utilization 69.2% ICU Level of Service 1.00 1.0	Intersection Summary							
Capacity ratio 0.49 Sum of lost time (s) 140.0 Sum of lost time (s) Utilization 69.2% ICU Level of Service	HCM 2000 Control Delay			10.8	Ĭ	CM 2000	Level of Service	В
h (s) 140.0 Sum of lost time (s) Utilization 69.2% ICU Level of Service	HCM 2000 Volume to Capa	city ratio		0.49				
Utilization 69.2% ICU Level of Service	Actuated Cycle Length (s)			140.0	જ	ım of lost	time (s)	18.4
A	Intersection Capacity Utiliza	tion		69.2%	೨	U Level o	f Service	O
C. C								

P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

Future Total AM (Interim) Upper Kerr Village (8124-01)

Movement EB1 EB1 MB1		1	†	<u> </u>	•	Ļ	1	•	←	4	٠	→	*
thin) 5 0 0 5 5 5 0 0 40 5 556 5 40 400 6400 6	Novement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Charmon S	ne Configurations		4			4			4			4	
Single S	affic Volume (veh/h)	2	0	2	2	0	40	2	555	2	40	400	5
No. 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	ture Volume (Veh/h)	2	0	2	2	0	40	2	222	S	40	400	2
ryth) 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	n Control		Stop			Stop			Free			Free	
ryth) 6 0 84 0 84 0 84 0 84 0 84 0 84 0 84 0	ade		%0			%0			%0			%0	
http://dx.com/dx	ak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
15 30 30 31 31 32 32 32 32 32 32	urly flow rate (vph)	9	0	9	9	0	48	9	991	9	48	476	9
1,1	destrians		15			೫							
Interpretation 1	ne Width (m)		3.6			3.6							
Mone	alking Speed (m/s)		[:			- -							
left) (m) Accred 0.90 0.80 0.83 0.90 0.87 0.83 238 Cubrane 1314 1299 494 1287 1299 694 497 697 Frod 1963 948 1287 1299 694 497 697 Frod 282 933 946 571 296 697 I 1 6 6 6 5 7.1 6 5 6 3 4.3 4.2 4.2 I 1 2 10 36 31 427 978 822 II 1 3 8 0.1 14 II 1 4 A A A A A A A A A A A A A A A A A A	rcent Blockage		-			က							
Mone	tht turn flare (veh)												
refn) (m) Aboved edian type								None			None		
(m) Docked Docked O.99 O.89 O.89 O.89 O.89 O.89 O.89 O.89	edian storage veh)												
boked 0.90 0.90 0.83 0.90 0.87 0.83 0.90 full burne 1314 1299 494 1287 1299 694 497 0.83 0.90 0.87 1299 694 497 0.90 0.87 1299 694 497 0.90 0.87 1299 694 497 0.90 0.89 0.90 0.87 1296 0.90 0.80 0.90 0.80 0.90 0.90 0.90 0.90	stream signal (m)								238			127	
Umne 1314 1299 494 1287 1299 694 497 Frod 658 946 292 933 946 571 296 Frod 658 946 292 933 946 571 296 Frod 7.1 6.5 6.5 7.1 6.5 6.3 4.3 Frod 7.1 6.5 6.5 7.1 6.5 6.5 Frod 7.1 6.5 6.5 7.1 6.5 Frod 7.1 6.5 6.5 7.1 Frod 7.1 6.5 6.5 Frod 7.1 6.5 6.5 Frod 7.1 6.5 6.5 Frod 7.1 Frod 7.1 6.5 Frod 7.1 6.5 Frod 7.1 6.5 Frod 7.1 Fro	, platoon unblocked	06:0	06.0	0.83	06:0	06:0	0.87	0.83			0.87		
Froil fool 863 946 292 933 946 571 296 7.1 6.5 6.5 7.1 6.5 6.3 4.3 3.5 4.0 36 3.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.5 6.5 7.1 6.5 6.3 4.3 7.1 6.7 6.3 8.9 7.2 213 558 198 213 427 978 6 6 48 6 6 48 6 6 48 6 6 48 6 7 8 8 22 11 3.8 0.1 1.4 11 3.8 0.1 1.4 11 3.8 0.1 1.4 (s) 19.3 16.1 0.2 1.6 C C A A A A A A A A A A A A B A B	, conflicting volume	1314	1299	494	1287	1299	694	497			269		
Froil 7.1 6.5 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 6.3 4.3 (1.5) 6.5 7.1 6.5 6.3 4.3 (1.5) 6.5 6.3 4.3 (1.5) 6.5 6.3 1.5 1.0 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 97 100 89 99 99 97 100 89 99 99 97 100 89 99 99 97 100 89 99 99 97 100 89 99 99 97 100 89 99 99 97 100 89 99 99 97 100 89 99 97 99 99 97 100 89 99 97 97	1, stage 1 conf vol												
ol 963 946 292 933 946 571 296 7.1 6.5 6.5 7.1 6.5 6.3 4.3 3.5 4.0 3.6 3.5 4.0 3.4 2.3 97 100 99 97 100 89 99 17 2 13 558 198 213 427 978 18 6 6 48 6 6 18 6 6 48 6 6 2 8 378 978 822 319 0.05 0.14 0.01 0.06 310 0.05 0.14 0.01 0.06 311 0.2 1.6 A A 32 378 922 33 378 922 34 35 378 922 35 4.0 1.4 0.01 0.06 36 7 1 0.2 1.6 37 1 0.2 1.6 38 22 1.6 38 22 1.6 39 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 37 1.3 16.1 0.2 1.6 30 30 37 1.3 16.1 0.2 1.6 30 30 30 30 30 30 30 30 30 30 30 30 30 3	2, stage 2 conf vol												
7.1 6.5 6.5 7.1 6.5 6.3 4.3 3.5 4.0 3.6 3.5 4.0 3.4 2.3 97 100 99 97 100 89 99 (h) 172 2.13 558 198 2.13 4.27 978 (EB1 WB1 NB1 SB1 1.2 54 673 530 6 6 6 48 6 6 6 48 6 6 6 48 (in) 0.05 0.14 0.00 (in) 1.1 3.8 0.1 1.4 (in) 19.3 16.1 0.2 1.6 (in) 19.3 16.1 0.2 1.6 (in) 19.3 16.1 0.2 1.6 (in) 16.3 16.1 0.2 1.	u, unblocked vol	963	946	292	933	946	571	296			275		
3.5 4.0 3.6 3.5 4.0 3.4 2.3 97 100 99 97 100 89 99 172 213 558 198 213 427 978 18 EB1 WB1 NB1 SB1 12 54 673 530 6 6 48 6 48 6 6 48 6 6 48 6 10 0.05 0.14 0.01 0.06 11 3.8 0.1 1.4 19.3 16.1 0.2 1.6 (s) 19.3 16.1 0.2 1.6 C C A A A A (s) 19.3 16.1 0.2 1.6 C C C A A A A A C C A A A A C C C A A A A C C C A A A A C C C A A A A C C C A A A A C C C C A A A A C C C C A A A A C C C A A A A C C C C A A A A C C C C A A A A C C C C A A A A C C C A A A A C C C C A A A A C	single (s)	7.1	6.5	6.5	7.1	6.5	6.3	4.3			4.2		
35	2 stage (s)												
Mary 172 213 558 198 213 427 978 8 198 213 427 978 8 198 213 427 978 8 198 213 427 978 8 198 213 427 978 8 198 123 427 978 8 123 427 978 8 123 428 123 428 123 8 123 8 123 8 123 8 123 8 123 8 123 8 123 1	(s)	3.5	4.0	3.6	3.5	4.0	3.4	2.3			2.3		
172 213 558 198 213 427 978	dnene free %	97	100	66	26	100	88	66			94		
EB1 WB1 NB1 SB1 12 54 673 530 6 6 6 48 6 8 6 6 48 6 0.5 0.14 0.01 0.06 (m) 1.1 3.8 0.1 1.4 C C A A A 19.3 16.1 0.2 1.6 C C A A 19.3 16.1 0.2 1.6 IV Ulization 58.2% ICU Level of Service	capacity (veh/h)	172	213	228	198	213	427	826			822		
12 54 673 530 6 6 48 6 78 6 48 6 8 6 48 6 978 822 0.05 0.14 0.01 0.06 (m) 1.1 3.8 0.1 1.4 19.3 16.1 0.2 1.6 C C A A A 19.3 16.1 0.2 1.6 C C A A A 19.3 16.1 0.2 1.6 NUIlization 158.2% ICU Level of Service	ection, Lane #	EB 1	WB 1	NB 1	SB 1								
6 6 6 48 6 8 6 48 6 8 8 6 6 48 78 378 978 822 0.05 0.14 0.01 0.06 1.1 38 0.1 14 19.3 16.1 0.2 1.6 C C A A A 19.3 16.1 0.2 1.6 C C C A A 19.3 16.1 0.2 1.6 In A B It B	lume Total	12	54	673	530								
(m) 1.1 3.8 0.1 1.4 1.6 (m) 1.1 1.3 1.0 1.1 1.4 1.9 1.5 (m. A A A A A A A A A A A A A A A A A A A	lume Left	9	9	9	48								
263 378 978 822 (m) 1.05 0.14 0.01 0.06 (m) 19.3 16.1 0.2 1.6 C C A A A A C C C A A A A A A A A A A A	lume Right	9	48	9	9								
(m) 1.1 3.8 0.1 1.4 1.1 3.8 0.1 1.4 1.9.3 16.1 0.2 1.6 1.0.2 1.6 1.0.2 1.6 1.0.2 1.6 1.0.2 1.6 1.0.3 1.0.1 Evel of Service 1.0.4 Utilization 58.2% ICU Level of Service	I	263	378	978	822								
(m) 1.1 38 0.1 1.4 19.3 16.1 0.2 1.6 C C A A A 19.3 16.1 0.2 1.6 C C A A 19.3 16.1 0.2 1.6 In C C C A A 1.6 In C C C C C C C C C C C C C C C C C C C	lume to Capacity	0.05	0.14	0.01	90.0								
19.3 16.1 0.2 1.6 C C A A A 19.3 16.1 0.2 1.6 C C any 1.6 I.16 I.16 I.20 I.20 I.20 I.20 I.20 I.20 I.20 I.20	ieue Length 95th (m)	[:	3.8	0.1	1.4								
C C A A A 19.3 16.1 0.2 1.6 C C C C C C C C C C C C C C C C C C C	introl Delay (s)	19.3	16.1	0.2	1.6								
19.3 16.1 0.2 1.6 C C any 1.6 I Mulization 58.2% ICU Level of Service 1)	ne LOS	O	ပ	∢	∢								
1.6 ICU Level of Service 15.7 15.16	Approach Delay (s)	19.3	16.1	0.2	1.6								
1.6 58.2% ICU Level of Service 15	proach LOS	O	O										
1.6 58.2% ICU Level of Service 15	ersection Summary												
58.2% ICU Level of Service 15	erage Delay			1.6									
	ersection Capacity Utilizat	ion		58.2%	ਹ	J Level o	f Service			Ф			
	alysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

wovement Lane Configurations Traffic Volume (veh/h) Future Volume (Veh/h)	EBL	EBK	NBL	NBI	200		
Lane Configurations Traffic Volume (veh/h) -uture Volume (Veh/h)						AGO	
Traffic Volume (veh/h) -uture Volume (Veh/h)	>			4	æ,		
-uture Volume (Veh/h)	50	10	2	535	370	30	
,	50	10	2	535	370	30	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly flow rate (vph)	24	12	9	629	435	35	
Pedestrians	20			2			
Lane Width (m)	3.6			3.6			
Walking Speed (m/s)	-			1.7			
Percent Blockage	2			0			
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Jpstream signal (m)				103	262		
X, platoon unblocked	0.30	06.0	0.90				
vC, conflicting volume	1114	478	490				
AC1, stage 1 conf vol							
vC2, stage 2 conf vol							
/Cu, unblocked vol	825	368	381				
.C, single (s)	6.4	6.2	4.1				
.C, 2 stage (s)							
F(s)	3.5	3.3	2.2				
p0 queue free %	92	98	66				
cM capacity (veh/h)	302	602	1053				
Direction, Lane #	EB 1	NB 1	SB 1				
/olume Total	36	635	470				
/olume Left	24	9	0				
/olume Right	12	0	35				
SH	362	1053	1700				
Volume to Capacity	0.10	0.01	0.28				
Queue Length 95th (m)	2.5	0.1	0.0				
Sontrol Delay (s)	16.0	0.2	0.0				
Lane LOS	O	∢					
Approach Delay (s)	16.0	0.2	0.0				
Approach LOS	O						
ntersection Summary							
Average Delay			9.0				
Intersection Capacity Utilization	tion		43.7%	2	ICU Level of Service	Service	ď
Analysis Period (min)			15				

Future Total AM (Interim) Upper Kerr Village (8124-01) Timings 9: Kerr Street & Stewart Street

Future Total AM (Interim) Upper Kerr Village (8124-01)

Queues 9: Kerr Street & Stewart Street

→	SBT	4	300	300	NA	9		9		24.0	32.0	45.0	20.0%	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	35					
۶	SBL		40	40	pm+pt	~	9	-		0.9	10.0		13.3%						Lead	Yes	3.0	3.0	0.0	0.0	None								
—	NBT	÷	430	430		2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32					
€	NBL		2	2	Perm		2	2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				f Green	
Ļ	WBT	4	32	32	Ϋ́	∞		œ		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				L, Start o	
\	WBL		20	20	Perm		∞	œ		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	70				nd 6:SBT	
†	EBT	4	52	52	ΑΝ	4		4					40.0%				0.0	5.4			4.0	3.0	0:0	0.0	None	10.0	13.0	70				2:NBTL a	
1	EBF		32	32	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				to phase	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

1032 0 0 0 0.44

459 0 0 0 0.17

Intersection Summary

1156

Control Delay
Queue Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Tur Bay Length (m)
Base Capacity (vph)
Sharváton Cap Reduch
Spillback Cap Reduch
Skorage Cap Reduch
Skorage Cap Reduch
Reduced v/c Ratio

SBT 452 0.44 9.3 0.0 9.3 19.5 51.2 51.2 79.0

WBT NBT 152 554 0.40 0.48 14.2 9.8 0.0 0.0 14.2 9.8 8.7 25.4 16.8 63.5 36.6 141.0

79 79 79 23.8 0.0 23.8 9.6 15.4 71.6

Lane Group Lane Group Flow (vph) v/c Ratio

₹04 04 \$08 ↓ 80 80 9: Kerr Street & Stewart Street **■** Ø2 (R) 🕶 Ø6 (R) 🌘 Splits and Phases: ğ

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HCM Signalized 9: Kerr Street & S

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street	ersectic wart St	on Cap reet	acity /	ınalysi	Ø			ш	Future Total AM (Interim) Upper Kerr Village (8124-01)	Fotal A	e Total AM (Interim) Upper Kerr Village (8124-01)	erim) 24-01)
	1	†	<i>></i>	>	↓	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	32	22	2	20	32	20	2	430	20	40	300	30
Future Volume (vph)	33	22	വ	20	33	2	വ	430	50	40	300	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
l otal Lost time (s)		5.4			5.4			4.0			4.0	
Lane Util. Factor		3 5			0.1			9.5			0.0	
Fipb, ped/bikes		00.0			0.9			0.0			0.33	
ripo, peuroikes Fr		000			0 0			00.0			00.0	
Fit Protected		0.97			0.99			1.00			0.99	
Satd. Flow (prot)		1701			1612			1775			1728	
Flt Permitted		0.79			0.94			1.00			0.91	
Satd. Flow (perm)		1388			1532			1769			1577	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	43	9	9	24	43	82	9	524	24	49	366	37
RTOR Reduction (vph)	0	2	0	0	89	0	0	_	0	0	က	0
Lane Group Flow (vph)	0	74	0	0	8	0	0	553	0	0	449	0
Confl. Peds. (#/hr)	20		20	20		20	30		35	35		30
Heavy Vehicles (%)	5%	%/	16%	%	2%	4%	78%	%9	%	5%	%9 ***	% '
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	4	0
Turn Type	Perm	Ϋ́ Y		Perm	Ϋ́		Perm	Ϋ́		pm+pt	≨	
Protected Phases		4		,	∞		,	2		_	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)		15.2			15.2			49.0			49.0	
Effective Green, g (s)		15.2			15.2			49.0			49.0	
Actuated g/C Ratio		0.20			0.20			0.65			0.65	
Clearance Time (s)		5.4			5.4			5.4			5.4	
Venicle Extension (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		281			310			1155			1030	
v/s Kato Prot		0			ı						0	
v/s Rato Perm		0.05			c0.02			c0.31			0.28	
V/c Kato		0.20			0.27			0.48			0.44	
Uniform Delay, d1		7.97			7.97			9.9			6.3	
Progression Factor		9.5			9.5			00:			1.00	
Incremental Delay, d2		0.7			9.0			4:			0.3	
Delay (s)		25.9			25.9			8.0			9.9	
Level of Service		ပ			ပ			⋖			⋖	
Approach Delay (s)		25.9			25.9			8.0			9.9	
Approach LOS		O			O			∢			⋖	
Intersection Summary												
HCM 2000 Control Delay			10.8	¥	HCM 2000 Level of Service	Level of 5	service		В			
HCM 2000 Volume to Capacity ratio	city ratio		0.45									
Actuated Cycle Length (s)			75.0	JS	Sum of lost time (s)	time (s)			13.8			
Intersection Capacity Utilization	lion		67.1%	<u> </u>	ICU Level of Service	1 Service			ပ			
Analysis Penod (min)			2									
c Critical Lane Group												

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Timings 10: Dorval Road & Wyecroft Roa

Future Total AM (Interim)	Upper Kerr Village (8124-01)	
	ad	

	4	†	-	ļ	•	←	۶	→	
Lane Group	BE	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	*	₹	r	₩	<u>_</u>	441	K.	441	
Traffic Volume (vph)	215	120	20	130	110	1345	155	995	
Future Volume (vph)	215	120	20	130	110	1345	155	995	
Turn Type	Prot	Ν	pm+pt	NA	pm+pt	₹	Prot	₹	
Protected Phases	7	4	က	∞	2	2	_	9	
Permitted Phases			∞		7				
Detector Phase	7	4	က	∞	2	2	-	9	
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0	
Minimum Split (s)	12.0	25.0	12.0	25.0	12.0	41.0	12.0	41.0	
Total Split (s)	21.0	40.0	21.0	40.0	17.0	42.0	17.0	42.0	
Total Split (%)	17.5%	33.3%	17.5%	33.3%	14.2%	35.0%	14.2%	35.0%	
Maximum Green (s)	16.0	33.0	16.0	33.0	12.0	35.0	12.0	35.0	
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	2.0	7.0	2.0	7.0	2.0	7.0	2.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	
Walk Time (s)		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)		11.0		11.0		27.0		27.0	
Pedestrian Calls (#/hr)		0		0		0		0	
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120	_								
Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	sed to phase	2:NBTL	and 6:SE	T, Start	of Green				
Natural Cycle: 90	potoniba								
COLITION 19pe. Actuated-COO	na lia lia								
Splits and Phases: 10: Do	10: Dorval Road & Wyecroft Road	& Wyecr	oft Road						
01	Ø2 (R)				, see			4	
42 s					218		4	0.5	
→	(a) 90				1	7		\$ **	
	(V)				1			3	

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Queues
10: Dorval Road & Wyecroft Road
Upper Kerr Village (8124-01)

	• •	† &	May a	↑	√ §	← Mark	≯ ₹	→ N	
ane Group Flow (vph)	234	244	22	402	120	1527	168	1560	
	09.0	0.30	0.08	0.68	0.54	0.68	0.45	0.72	
	9.99	20.8	27.9	26.0	26.8	17.8	53.6	28.3	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9.99	20.8	27.9	26.0	26.8	17.8	53.6	28.3	
Queue Length 50th (m)	27.0	11.8	3.6	19.5	7.9	96.4	19.4	100.5	
Queue Length 95th (m)	40.0	24.6	8.9	34.2	m13.5	m143.8	29.5	140.1	
ntemal Link Dist (m)		155.6		199.3		494.4		672.1	
urn Bay Length (m)	115.0		145.0		65.0		125.0		
Sase Capacity (vph)	416	938	363	1031	239	2236	386	2178	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.26	90:0	0.39	0.50	0.68	0.44	0.72	
Appropries Summary									
Sammal y									

more for 95th percentile queue is metered by upstream signal.

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HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total AM (Interim) Upper Kerr Village (8124-01)

	•	†	<i>></i>	>	ţ	4	•	←	•	۶	-	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	₩.		<u>, </u>	₽		r	4413		F	4413	
Traffic Volume (vph)	215	120	105	20	130	240	110	1345	09	155	995	440
Future Volume (vph)	212	120	105	50	130	240	110	1345	09	155	995	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lotal LOSt Wille (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Frpb. ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	06.0		1.00	0.99		1.00	0.95	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3127	3072		1637	3129		1641	5035		3433	4667	
Flt Permitted	0.95	1.00		09.0	1.00		0.08	1.00		0.95	1.00	
Satd. Flow (perm)	3127	3072		1034	3129		140	5035		3433	4667	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	130	114	22	141	261	120	1462	65	168	1082	478
RTOR Reduction (vph)	0	87	0	0	200	0	0	က	0	0	72	0
Lane Group Flow (vph)	234	157	0	22	202	0	120	1524	0	168	1506	0
Confl. Peds. (#/hr)	2		က	က		5	_					_
Heavy Vehides (%)	15%	%/	% 6	10%	2%	5%	40%	5%	%	5%	2%	%/
Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
Turn Type	Prot	Ϋ́		pm+pt	≱		pm+pt	≨		Prot	Ϋ́	
Protected Phases	7	4		က	00		2	2		-	9	
Permitted Phases				∞			2					
Actuated Green, G (s)	14.9	28.9		21.8	17.9		61.7	50.1		13.1	51.6	
Effective Green, g (s)	14.9	28.9		21.8	17.9		61.7	50.1		13.1	51.6	
Actuated g/C Ratio	0.12	0.24		0.18	0.15		0.51	0.42		0.11	0.43	
Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	388	739		207	466		217	2102		374	2006	
v/s Ratio Prot	c0.07	0.05		0.00	90.00		c0.05	0.30		0.05	00.32	
v/s Ratio Perm				0.02			0.23					
v/c Ratio	09.0	0.21		0.11	0.43		0.55	0.72		0.45	0.75	
Unitorm Delay, d1	49.8	36.5		40.7	46.4		19.4	29.5		50.1	28.8	
Progression Factor	00.1	00.1		1.00 2.0	1.00		121	0.60		00.1	0.1	
Incremental Delay, d2	ک کن در	D. 0.		0.5	4. 5		2.5	6		× 5	2.6	
Delay (s)	03.0	30.0 1		7.14	0.74		-07	10./		ى ك. ا	4.10	
Level of Service	۵	۵		۵	۵		ပ	m		Ω	ပ	
Approach Delay (s)		45.0			47.4			19.2			33.4	
Approach LOS		Ω			Ω			ш			O	
Intersection Summary												
HCM 2000 Control Delay			30.6	Ĭ	HCM 2000 Level of Service	evel of S	ervice		ပ			
HCM 2000 Volume to Capacity ratio	ty ratio		0.64									
Actuated Cycle Length (s)			120.0	S	Sum of lost time (s)	time (s)			24.0			
Intersection Capacity Utilization	n		73.0%	೦	ICU Level of Service	Service						
Analysis Period (min)			15									
c Critical Lane Group												

P.181124010PA Processi3. Analysisi01 - SynchrolFTAM.syn BA Group - EFS

Future Total AM (Interim) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 11: Speers Road & Interim Connection

##
725 15 0 775 15 0 775 15 10 0 778 16 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Free Stop O'%
None None 169 0.85 169 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.80 0.
0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0
None 169 169 169 169 1788 16 10 10 10 10 1780 1780 1780 1780 1780 17
None 169 0.89 0 1280 1280 0 1280 0 1280 0 1280 0 1280 0 100
None 169 0.89 0 1280 1280 1280 100 278 100 278 100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
None 169 0.89 0 1280 1280 0.85 0.85 0.87 0.87 0.87 0.87 0.87 0.87 0.87 0.87
None 169 089 089 1280 1280 1280 085 825 825 825 100 100 100 125 1700 1700 1700 1700 1700 1700 1700 170
None 169 0.89 0 1280 1280 1280 0 0 0 0 0 0 0 16 1780 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
None 169 0.89 0 1280 1280 0.89 0 825 0.8 825 0
169 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.8
169 0.89 (C 1280 C 1280
169 0.089 (C 1280
0.89 (1280 - 128
1280 825 100 278 278 278 278 279 270 270 271 272 273 274 275 276 277 278 27
825 6.8 6.8 3.5 100 278 278 0.0 10 10 10 10 10 10 10 10 10 10 10 10 10
625 6.8 3.5 100 278 WB1 WB2 SB1 625 279 125 0 0 0 0 125 1700 1700 925 0.31 0.16 0.14 0.0 0.0 3.5 0.0 0 0 3.5 0.0 0 0 3.5
825 825 68 35 WB1 WB2 SB1 278 278 278 0 0 0 0 0 16 1700 1700 925 0.31 0.16 0.14 0.0 0.0 3.5 0.0 0.0 3.5
8.8 3.5 100 100 278 855 279 125 0 0 0 0 16 125 1700 170
3.5 100 278 278 278 278 279 125 270 10 10 10 10 10 10 10 10 10 1
35 10 10 10 10 10 10 10 10 10 10
100 100 100 100 100 100 100 100
278 WB1 WB2 SB1 525 279 125 0 0 0 0 0 16 125 1700 1700 925 0.31 0.16 0.14 0.0 0.0 3.5 0.0 0.0 9.5 0.0 0.0 9.5
WB1 WB2 \$ 525 279 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
525 279 0 0 0 1700 1700 1700 0.31 0.16 0.0
0 0 16 1700 1700 0.31 0.16 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
0 16 0.31 0.16 0.0 0.0 0.0 0.0 0.0 0.0
1700 1700 0.31 0.16 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.
0.31 0.16 0.0 0.0 0.0 0.0 0.0 0.0
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P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

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Future Total PM (Interim)	Upper Kerr Village (8124-01)	
HCM Unsignalized Intersection Capacity Analysis	1: Kerr Street & Wyecroft Road	

																																								A	
																											SB 2	313	0	118	1700	81.0	0.0	0:0							
*	SBR		110	110			0.93	118																			SB 1	391	0	0	1700	0.23	0.0	0:0		0.0				Service	
→	SBT	₩	545	545	Free	%0	0.93	586						None													NB 3	360	0	0	1700	0.21	0.0	0:0						ICU Level of Service	
←	NBT	‡	029	029	Free	%0	0.93	720						None													NB 2	360	0	0	1700	0.21	0.0	0.0						ರ	
•	NBL	r	125	125			0.93	134										602			402	4.2		2.3	84	826	NB 1	134	134	0	856	0.16	7.4	0.01	∢	9.			2.5	38.9%	15
*	EBR	*	145	145			0.93	156										357			357	7.0		3.3	75	631	EB 2	156	0	156	631	0.25	4.7	9.7	m						
4	EBF	*	52	52	Stop	%0	0.93	27	2	3.6	7:	0						1278			1278	8.9		3.5	8	135	EB 1	27	27	0	135	0.20	4:00	38.2	ш	16.4 C				L.	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	(€ (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	: CH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s) Approach LOS	C and description of the control of	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

P.(81)24(01)OPA Process\3. Analysis\01 - Synctro\FTPM.syn BA Group - EFS

Future Total PM (Interim) Upper Kerr Village (8124-01) Timings 2: Kerr Street & Shepherd Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

Queues 2: Kerr Street & Shepherd Road

SBR 54 0.05 1.7 1.7 0.0 3.0

SBT 464 4.6 0.0 0.0 4.6 4.6 7.2 7.2 7.14 2114

SBL 160 0.27 5.1 5.1 4.1

108 0.16 3.7 0.0 3.7 0.0 7.5

582 0.42 12.7 12.7 17.9 34.6 143.2

130 0.37 15.6 0.0 15.6 7.5 21.8

WBT 160 0.38 7.7 0.0 7.7 0.8 13.0 241.3 98 98 0.40 0.0 0.0 23.1 7.2 20.2

38 0.11 0.0 0.0 0.3 6.4 6.4

38 0.17 19.1 0.0 19.1 2.7

Lane Group Lane Group Flow (vph) v/c Ratio

50.0

50.0

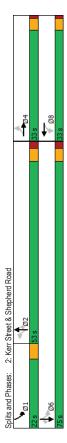
50.0

Control Delay
Queue Delay
Total Delay
Queue Enright 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (np)
Sanvation Cap Reduch
Spillback Cap Reduch
Sorage Cap Reduch
Sorage Cap Reduch

0.16

Intersection Summary

*	SBR	*	20	20	Perm		9	9		18.0	28.2	75.0	69.4%	8.69	3.3	1.9	0.0	5.2			3.5	3.0	0.0	0.0	Min	10.0	13.0	2					
→	SBT	‡	420	420	Ϋ́	9		9		18.0	28.2	75.0	69.4%	8.69	3.3	6.1	0.0	5.2			3.5	3.0	0.0	0.0	Min	10.0	13.0	2	i				
۶	SBL	r	155	155	pm+pt	_	9	_		7.0	11.0							4.0											ĺ				
*	NBR		105		а.		2	2										5.2								10.0			i				
—	NBT		565					2										5.2											i				
•	Jan .	l	120				2						-					5.2	Lag										i				
↓	- WBT		9			ω	~	8				33.0												0.0					i				
•	T WBL	l	5 95			4	00	4				0 33.0												0.0					i				
Ť	L EBT		5 5			•	4	4				0 33.0												0.0					i				
1	EBL		35	3	Perm					5.	22.	33.0	30.6	29.	ю.	Ψ.	0	4			S.	κi	0	0.0	Non	7.	1.				4.		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 108	Actuated Cycle Length: 49.4	Natural Cycle: 65	Security Over 50



P.:81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Synchro 11 Report Page 2

 Synchro\FTPM.syn 	
Analysis/01	
Process\3.	
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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

EBL EST EBR WBL WBT WBR NBI NBI WBL WBL <th>EBI EBT WEL WET WER NBL NBT NBT NBT NBT NBT NBT NBT NBT NBT NBT</th> <th></th> <th>1</th> <th>1</th> <th>~</th> <th>></th> <th>ţ</th> <th>4</th> <th>•</th> <th>←</th> <th>4</th> <th>۶</th> <th>→</th> <th>•</th>	EBI EBT WEL WET WER NBL NBT		1	1	~	>	ţ	4	•	←	4	۶	→	•
1	1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
35 5 30 95 10 145 120 565 105 155 450 1900 1900 1900 1900 1900 1900 1900 190	35 5 30 95 10 145 120 565 1900	Lane Configurations	F	¢		F	¢		F	44	K	F	44	*
100 100 190	100 100	Traffic Volume (vph)	32	2	30	92	9	145	120	265	105	155	420	20
1900 1900	1900 1900	Future Volume (vph)	33	വ	8	8	9	145	120	265	105	155	420	20
4,0 4,0 4,0 4,0 4,0 4,0 6,2 5,2 5,2 4,0 5,2 1,00	4,0 4,0 4,0 4,0 5,2 5,2 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 0,99 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Total Lost time (s)	4.0	4.0		4.0	4.0		2.5	5.2	5.2	4.0	5.2	5.2
1,00	1.00 1.00 0.99 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	1.00	1.00		1:00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
1.00 1.00 1.00 0.99 1.00 1.00 1.00 1.00	100 100 0.99 1.00 1.	Frpb, ped/bikes	1.00	1.00		1:00	0.99		1.00	1.00	0.97	1.00	1.00	1.00
1.00 0.87 1.00 0.86 1.00 1.00 0.85 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1,00 0.87	Flpb, ped/bikes	1.00	1.00		0.39	1.00		1.00	1.00	1.00	1.00	1.00	1.00
1770 1620 1772 1593 17770 1520 1593 17770 1520 1593 17770 1520 1593 17770 1520 1593 17770 1520 1593 17770 1520 1593 17770 1520 1593 1543 1645 1500 1000	1770 625 100 095 100 095 100 1770 620 1732 1593 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770 3539 1770	Frt	1.00	0.87		1.00	0.86		1.00	1.00	0.85	1.00	1.00	0.85
1770 1620 1732 1593 1770 3539 1543 1804 3574 1	1770 1520 1732 1593 1770 3539 1770 1529 1730 1732 1593 1770 3539 1770 3539 1770 3539 1770 3539 1721 1520 1532 1593 1740 1359 1700 1359 1700 1359 1700 1359 1700 1359 1700 1359 1700 1359 1700 1359 1700 1359 1700 1359 1700	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
1,000	100 0.05 1.00 0.049 1.00 0.049 1.00 0.049 1.00 0.05 1.00 0.049 1.00 0.05	Satd. Flow (prot)	1770	1620		1732	1593		1770	3539	1543	1804	3574	1583
1221 1620	1221 1520	Flt Permitted	99.0	1.00		0.73	1.00		0.49	1.00	1.00	0.34	1.00	1.00
F 0.92 0.92 0.92 0.97 0.92 0.97 0.92 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	F 092 092 097 092 097 092 097 092 097 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 097 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	1221	1620		1335	1593		904	3539	1543	645	3574	1583
38 5 33 98 11 149 130 582 108 160 464 10 0 0 121 0 0 0 0 121 0 0 0 0 0 0 0 0 0	38	Peak-hour factor, PHF	0.92	0.92	0.92	0.97	0.92	0.97	0.92	0.97	0.97	0.97	0.97	0.92
1	1) 0 27 0 0 121 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	89	S)	33	88	Ħ	149	130	582	108	160	464	54
1) 38 11 0 98 39 0 130 582 42 160 464 2% 2% 2% 3% 1% 2% 1% 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	1) 38 11 0 98 39 0 130 582 2% 2% 2% 3% 2% 1% 1% 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	RTOR Reduction (vph)	0	27	0	0	121	0	0	0	99	0	0	20
2% 2% 3% 2% 15 5 5 5 5 5 5 6 <td>2% 2% 2% 3% 2% 1% 5% 1% 1% 2% 1% 1% 2% 1% 2% 1% 2% 1%<</td> <td>Lane Group Flow (vph)</td> <td>88</td> <td>7</td> <td>0</td> <td>86</td> <td>33</td> <td>0</td> <td>130</td> <td>582</td> <td>42</td> <td>160</td> <td>464</td> <td>34</td>	2% 2% 2% 3% 2% 1% 5% 1% 1% 2% 1% 1% 2% 1% 2% 1% 2% 1%<	Lane Group Flow (vph)	88	7	0	86	33	0	130	582	42	160	464	34
2% 2% 3% 2% 1% 2% 1%<	2% 2% 3% 2% 1% 2% 1% 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 5 1% 1% 0 0 0 0 0 0 0 0 5 1%	Confl. Peds. (#/hr)				15		2			2	2		
Name	Name	Heavy Vehicles (%)	5%	2%	5%	3%	5%	%	5%	1%	5%	%0	1%	5%
Perm NA	Perm NA	Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	0	0
4 8 2 1 6 4 8 2 2 1 6 9.3 9.7	4 4 8 2 2 4 8 8 2 2 93 9.3 9.3 9.3 19.1 19.1 9.3 9.3 9.3 9.3 19.1 19.1 9.1 9.19 0.19 0.19 0.19 0.39 0.39 4.0 4.0 4.0 4.0 5.2 <td>Turn Type</td> <td>Perm</td> <td>NA</td> <td></td> <td>Perm</td> <td>Ν</td> <td></td> <td>Perm</td> <td>NA</td> <td>Perm</td> <td>pm+pt</td> <td>N N</td> <td>Perm</td>	Turn Type	Perm	NA		Perm	Ν		Perm	NA	Perm	pm+pt	N N	Perm
4 8 3 3 6 6 7 6 7 6 7 6 7	4 8 8 2 2 5 3 9.3 9.3 9.3 9.1 6 9.3 9.3 9.3 9.1 7 9.3 9.3 9.3 9.1 8 9.3 9.3 9.3 9.1 9 9.3 9.3 9.3 9.1 9 1.0 0.19 0.19 0.19 0.39 0.39 4 0 4 0 4 0 0.39 0.39 1 1 2 3 3 3 3 3 3 2 2 3 3 3 3 3 3 2 3 3 3 3 3 3 3 2 3 3 3 3 3 3 3 2 3 3 3 3 3 3 3 2 3 3 3 3 3 3 3 3 2 2 3 3 3 4 3 3 3 3 3 5 4 4 4 4 4 6 3 5 5 5 5 5 5 5 5 5 5	Protected Phases		4			∞			2		τ-	9	
9.3 9.3 9.3 9.3 9.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7	9.3 9.3 9.3 19.1 19.1 19.1 19.1 19.1 19.	Permitted Phases	4			∞			2		2	9		9
9.3 9.3 9.3 9.3 9.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7.3 7	93 93 93 93 191 191 191 191 191 191 191	Actuated Green, G (s)	9.3	9.3		9.3	9.3		19.1	19.1	19.1	30.7	30.7	30.7
0.19 0.19 0.19 0.19 0.19 0.39 0.39 0.39 0.62 0.62 0.62 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	0.19 0.19 0.19 0.19 0.19 0.39 0.39 4.0 4.0 4.0 4.0 5.2 5.2 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.01 0.03 0.07 0.04 0.10 0.10 0.03 0.13 0.2 0.14 1.00 1.00 1.00 1.00 0.10 0.10 0.10 1.00 1.00	Effective Green, g (s)	9.3	9.3		9.3	9.3		19.1	19.1	19.1	30.7	30.7	30.7
4.0 4.0 4.0 4.0 4.0 4.0 4.0 5.2 5.2 5.2 4.0 5.2 3.0 3.0 3.0 3.0 3.0 3.0 3.5 3.5 2.5 4.0 5.2 2.3 3.0 3.0 3.0 3.5	4.0	Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.39	0.39	0.39	0.62	0.62	0.62
30 30 30 30 35 35 35 35	30 30 30 30 30 35 35 35	Clearance Time (s)	4.0	4.0		4.0	4.0		5.2	5.2	5.2	4.0	5.2	5.2
230 306 252 301 350 1373 599 581 2230 0.01 0.02 0.016 0.018 0.018 0.001 0.03 0.014 0.03 0.014 0.03 0.03 0.13 0.37 0.42 0.07 0.28 0.21 0.05 0.03 0.13 0.14 0.03 0.13 0.14 0.07 0.02 0.03 0.13 0.10 0.100 1.00 1.00 1.00 1.0	230 306 252 301 350 1373 1000 2001 2002 0.016 0.016 0.017 0.04 0.039 0.13 0.14 0.04 0.17 0.04 0.039 0.13 0.14 0.10 0.17 0.04 0.039 0.13 0.15 0.16 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5	3.5	2.5	3.5	3.5
0.03	0.01 0.02 0.01 0.01 0.02 0.01 0.01 0.03 0.01 0.03 0.01 0.03 0.01 0.01	Lane Grp Cap (vph)	230	306		252	301		320	1373	299	281	2230	987
0.03	0.03	v/s Ratio Prot		0.01			0.02			c0.16		c0.04	0.13	
16.7 0.04 0.39 0.13 0.37 0.42 0.07 0.28 0.21 16.7 0.04 0.39 0.13 0.37 0.42 0.07 0.28 0.21 16.0 1.0	16.7 1 0.04 0.39 0.13 0.37 0.42 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1	v/s Ratio Perm	0.03			c0.02			0.14		0.03	0.13		0.02
16.7 16.3 17.5 16.6 10.8 11.0 9.5 4.1 4.0 1.00 1.00 1.00 1.00 1.00 1.00 1	16.7 16.3 17.5 16.6 10.8 11.0 1.00 1.00 1.00 1.00 1.00 1.00	v/c Ratio	0.17	0.0		0.39	0.13		0.37	0.42	0.07	0.28	0.21	0.03
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	16.7	16.3		17.5	16.6		10.8	11.0	9.5	4.	4.0	3.6
0.3 0.0 1.0 0.2 0.8 0.3 0.1 0.2 0.1 1.1 0.2 0.1 1.2 0.1 1.2 0.1 1.3 0.5 0.1 0.2 0.1 1.3 0.5 0.1 0.2 0.1 1.3 0.5 0.1 0.2 0.1 1.3 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.2 0.1 0.2 0.2 0.1 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2	0.3 0.0 1.0 0.2 0.8 0.3 0.3 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
17.0 16.3 18.5 16.8 11.5 11.3 9.5 4.3 4.1 B B B B A A A A A 11.1 16.7 17.4 11.1 4.1 B B B B A A A A A A A A A A A A A A A	17.0 16.3 18.5 16.8 11.5 11.3 18.8 11.5 11.3 18.8 11.5 11.3 18.8 11.5 11.3 18.8 11.5 11.3 18.8 18.8 18.8 18.8 18.8 18.8 18.8	Incremental Delay, d2	0.3	0.0		0.	0.2		0.8	0.3	0.1	0.2	0.1	0.0
B B B B B B A A A	B B B B B B B B B B B B B B B B B B B	Delay (s)	17.0	16.3		18.5	16.8		11.5	11.3	9.2	4.3	4.1	3.6
16.7 17.4 11.1 4. B B B B B B B B B B B B B B B B B B B	11.1 B B B Compactly ratio 0.39 Dilitzation 60.3% CU Level of Service Compactly ratio 60.3% CU Level of Service	Level of Service	ш	ω		ш	ш		ω	ω	⋖	⋖	⋖	⋖
B B B B B B B B B B B B B B B B B B B	B B B B B B B B B B B B B B B B B B B	Approach Delay (s)		16.7			17.4			1.			4.1	
18y 9.6 HCM 2000 Level of Service Capacity ratio 0.39 Sum of lost time (s) h (s) 6.3% ICU Level of Service 15 15 15 15 15 15 15 1	1	Approach LOS		В			В			В			¥	
slay 9.6 HCM 2000 Level of Service Capacity ratio 0.39 HCM 2000 Level of Service h (s) 49.2 Sum of lost time (s) Utilization 60.3% ICU Level of Service 15 15	slay 9.6 HCM 2000 Level of Service Capacity ratio 0.39 World Figure h (s) 49.2 Sum of lost time (s) Utilization 60.3% CU Level of Service	Intersection Summary												
Capacity ratio 0.39 (49.2 Sum of lost time (s) (6) (49.2 Sum of lost time (s) (19.2 Sum of lost time (s) (s) (19.2 Sum of lost time (s)	Capacity ratio 0.39	HCM 2000 Control Delay			9.6	Ĭ	3M 2000	Level of S	Service		⋖			
h (s) 49.2 Sum of lost time (s) Utilization 60.3% ICU Level of Service	h (s) 49.2 Sum of lost time (s) Utilization 60.3% ICU Level of Service	HCM 2000 Volume to Capac	ity ratio		0.39									
Utilization 60.3% ICU Level of Service	Utilization 60.3% ICU Level of Service	Actuated Cycle Length (s)			49.2	જ	m of lost	time (s)			13.2			
		Intersection Capacity Utilizat	ion		%8.09	೦	U Level o	f Service			ш			
		Analysis Period (min)			15									
c Cilical Laire Group														

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Synchro 11 Report Page 4

Future Total PM (Interim) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	1	-	ļ	4	•	←	*	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	‡	*	×	‡	*-	F	*	¥.	F	*	*-
Traffic Volume (vph)	160	565	130	300	902	495	140	180	235	300	260	20
Future Volume (vph)	160	265	130	300	902	495	140	180	235	300	260	20
Turn Type	pm+pt	ΑN	Perm	pm+pt	≨	Perm	pm+pt	≨	Perm	Prot	Ϋ́	Perm
Protected Phases	Ψ-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			œ
Detector Phase	Ψ-	9	9	2	7	2	7	4	4	က	∞	∞
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Total Split (s)	12.0		54.0	12.0	54.0	54.0	16.0		38.0	16.0	38.0	38.0
Total Split (%)	10.0%	42.0%	42.0%	10.0%	42.0%	42.0%	13.3%	31.7%	31.7%	13.3%	31.7%	31.7%
Maximum Green (s)	9.0		48.1	9.0	48.1	48.1	13.0		31.7	13.0	31.7	31.7
Yellow Time (s)	3.0		3.7	3.0	3.7	3.7	3.0		3.3	3.0	3.3	3.3
All-Red Time (s)	0.0		2.2	0.0	2.2	2.2	0.0		3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0		5.9	3.0	5.9	5.9	3.0		6.3	3.0	6.3	6.3
Lead/Lag	Lead		Lag	Lead	Lag	Lag	Lead		Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
Vehide Extension (s)	2.5		5.5	2.5	5.5	5.5	2.5		4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None		None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		12	15		15	12		32	32		32	32
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Officet: 40 /440/ Deferrence at became of 6.EDTI	o oo da of b	D-MADTI	G G G		Ctort of Croon							

Offset: 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated

√ Ø7 Splits and Phases: 3: Kerr Street & Speers Road **♦ Ø**2(R) √ øs • ♣ø6 (R) Ø1

P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Future Total PM (Interim) Upper Kerr Village (8124-01) Queues 3: Kerr Street & Speers Road

	1	†	>	>	ţ	4	•	-	*	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	595	137	316	953	521	147	189	247	316	274	53
v/c Ratio	0.50	0.37	0.18	0.63	0.56	0.54	0.50	0.56	0.53	0.83	0.74	0.15
Control Delay	14.3	21.9	10.0	20.5	25.2	4.9	33.0	50.2	8.9	71.7	27.75	3.8
Queue Delay	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	21.9	10.0	20.5	25.2	4.9	33.0	50.2	8.9	71.7	27.75	3.8
Queue Length 50th (m)	22.0	51.1	9.5	33.9	83.0	3.1	24.5	40.7	0.0	38.2	61.4	0.0
Queue Length 95th (m)	38.2	76.1	21.2	#62.0	118.1	28.2	35.8	9.89	19.7	9.09#	8 1.	4.7
Internal Link Dist (m)		138.4			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	347	1587	780	205	1704	972	319	495	574	384	201	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.48	0.37	0.18	0.63	0.56	0.54	0.46	0.38	0.43	0.82	0.55	0.12

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

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P.\81\2401\0PA Process\3. Analysis\01 - SynchroFTPM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

	1	†	<i>></i>	>	ţ	4	•	←	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	*	æ	r	‡	¥.	k	*	æ	K.	*	¥.
Traffic Volume (vph)	160	565	130	300	902	495	140	180	235	300	260	20
Future Volume (vph)	160	265	130	300	902	495	140	180	235	300	260	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frpb, ped/bikes	1.00	1:00	0.97	1.00	1.00	0.94	1:00	1:00	0.93	1.00	9.	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00	0.0	1.00
	00.1	00.1	0.85	00.1	0.1	0.83	00.1	00.1	0.85	0.5	9.5	0.0
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	7081	3511	0001	06/1	3238	1485	0//L	1/81	1486	796	0061	1501
Fit Permitted	0.22	1.00	1.00	0.35	00.1	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Sald. Flow (perm)	410	100	0001	000	3228	1400	470	/ /01	1400	7040	0061	1001
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	88	292	137	316	953	521	147	183	247	316	274	23
RTOR Reduction (vph)	0	0	75	0	0	258	0	0	203	0	0	43
Lane Group Flow (vph)	8	292	62	316	923	263	147	189	44	316	274	9
Confl. Peds. (#/hr)	30		2	2		30	32		35	32		35
Heavy Vehicles (%)	%0	5%	%0	3%	5%	2%	1%	%0	1%	1%	%0	%0
Bus Blockages (#/hr)	0	4	0	0	0	0	0	3	0	0	0	0
Turn Type	pm+pt	AA	Perm	pm+pt	¥	Perm	pm+pt	¥	Perm	Prot	AA	Perm
Protected Phases	_	9		2	2		7	4		က	œ	
Permitted Phases	9		9	2		2	4		4			8
Actuated Green, G (s)	63.6	54.2	54.2	70.1	27.79	27.7	33.0	21.6	21.6	13.1	23.3	23.3
Effective Green, g (s)	63.6	54.2	54.2	70.1	27.7	27.7	33.0	21.6	21.6	13.1	23.3	23.3
Actuated g/C Ratio	0.53	0.45	0.45	0.58	0.48	0.48	0.28	0.18	0.18	0.11	0.19	0.19
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	5.5	5.5	5.5	2.5	5.5	2.2	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	323	1585	704	491	1/01	/14	780	337	797	3/8	368	291
Ws Katlo Prot	0.04	0.17	2	c0.07	0.77	0,0	0.05	0.10	0	80.03	SO. 14	2
We Patio	0.53	0.38	0.04	0.0.5	0.56	0.10	0.03	0.56	0.03	0.84	0 74	0.0
Uniform Delay, d1	15.9	21.7	18.8	13.5	22.1	19.7	34.8	44.9	41.6	52.4	45.5	39.2
Progression Factor	0.78	0.92	2.48	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	0.7	0.2	5.6	1.3	1.5	1.4	5.6	0.4	14.5	8.4	0.1
Delay (s)	13.4	20.6	46.7	16.1	23.5	21.1	36.2	47.5	42.0	6.99	54.0	39.3
Level of Service	ш	O	Ω	В	O	O	□			ш	Ω	
Approach Delay (s)		23.2			21.5			42.3			59.1	
Approach LOS		O			O			۵			ш	
Intersection Summary												
HCM 2000 Control Delay			31.2	Ĭ	HCM 2000 Level of Service	Level of §	Service		O			
HCM 2000 Volume to Capacity ratio	ity ratio		0.71									
Actuated Cycle Length (s)			120.0	S	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	ion		78.4%	೦	ICU Level of Service	f Service			Ω			
Analysis Period (min)			15									
c Critical Lane Group												

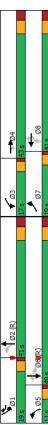
P.181/2401/OPA Process\(\alpha\). Analysis\(\text{01}\) - Synchro\FTP\(\mathbb{I}\) syn BA Group - EFS

Future Total PM (Interim) Upper Kerr Village (8124-01) Timings 4: Dorval Road & Speers Road

	1	†	~	-	↓	4	•	←	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	F	‡	*	<i>y</i> -	‡	*-	*	+	r	\$	¥c_	
Traffic Volume (vph)	415	520	20	175	069	490	65	615	280	685	375	
Future Volume (vph)	415	520	20	175	069	490	92	615	280	685	375	
Turn Type	Prot	Ϋ́	Perm	pm+pt	Ϋ́	vo+mq	pm+pt	Ϋ́	pm+pt	ΑΝ	Perm	
Protected Phases	7	4		က	∞	_	2	2	_	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	-	2	2	~	9	ဖ	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0		45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	19.0		43.0	17.0	41.0	19.0	11.0	41.0	19.0	49.0	49.0	
Total Split (%)	15.8%		35.8%	14.2%	34.2%	15.8%	9.5%	34.2%	15.8%	40.8%	40.8%	
Maximum Green (s)	15.0		36.0	13.0	34.0	15.0	7.0	34.0	15.0	45.0	45.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0		3.0	1.0	3.0	1.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0		7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead		Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0		2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None		None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Offset 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

4: Dorval Road & Speers Road Splits and Phases:



P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Future Total PM (Interim) Upper Kerr Village (8124-01) Queues 4: Dorval Road & Speers Road

ane Group EE ane Group Flow (vph) 44, // Retio 0.1 Octorio Delay 0.74 Jueue Delay 74 Jueue Length 50th (m) ~56 Jueue Length 50th (m) ~67 Jueue Length 50th (m) 60th Ium Bay Length (m) 60th Sase Capacity (vph) 44 Salevation Cap Reducth 50th Songe Cap Reducth	EBT EBR WBL	HBT WBR 750 533 1.80 0.75 5.0 24.8 5.0 24.8 5.1 24.8 7.5 40.1 8.2 81.4 2.1 55.0 0 0 0	NBL 771 771 771 0.25 20.8 20.8 20.8 20.8 20.8 20.8 20.8 20.8	NBT 755 0.78 46.1 0.0 0.0 0.0 100.5 621.6 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	SBL 304 304 304 65.3 31.9 #105.1 110.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	28T 745 0.57 16.0 0.0 16.0 58.3 28.6 494.4 1306 0	SBR 408 0.50 2.6 0.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Reduced v/c Ratio 0.91	451 855 54 190 750 031 051 009 049 080 74.5 36.1 0.3 32.3 55.0 0 0.0 0.0 0.0 0.0 0.0 74.5 36.1 0.3 32.3 55.0 -93.7 88.2 0.0 28.9 75.5 #91.8 75.5 0.0 54.4 108.2 412.3 60.0 85.0 496 1110 885 405 1004 0 0 0 0 0	0 0		1	0	720	0 20

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

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

Moderner EB EB EB Moderner EB EB Moderner EB EB EB Moderner EB EB EB Moderner EB EB EB Moderner EB EB EB EB Moderner EB		1	†	>	-	ţ	4	•	-	*	٠	→	*
10 10 10 10 10 10 10 10	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
14 5 5 5 5 7 7 6 6 6 6 6 6 6 6	ane Configurations	KK	**	K	K	**	K	K	#		K	**	×
1415 520 50 175 590 490 565 615 80 280 685 615 80 280 685 615 80 280 685 615 80 280 685 615 80 280 685 615 80 280 685 615 80 280 615 80 280 615 80 280 615 80 28	Fraffic Volume (vph)	415	520	20	175	069	490	65	615	80	280	685	375
1900 1900	-uture Volume (vph)	415	520	20	175	069	490	92	615	80	280	685	375
4,0 7,0 7,0 4,0 7,0 4,0 7,0	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.97 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Fotal Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
1.00 1.00 0.98 1.00 1.00 0.99 1.00 1.00 1.00 1.00 1.00	ane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
100 100 100 100 100 100 100 100 100 100	rpb, ped/bikes	1:00	1.00	0.98	1.00	1.00	0.99	1:00	1.00		1.00	1.00	1.00
1.00 1.00 0.85 1.00 1.00 0.85 1.00 0.98 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1	-lpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.93 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	<u>.,</u>	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
343 3560 1556 1786 3546 1581 1805 3512 1787 3574 3433 3560 1556 727 3546 1581 615 3512 1787 3574 3433 3560 1556 727 3546 1581 615 3512 280 3574 451 565 54 190 750 632 092 092 092 092 5	It Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
0.95 1.00 1.00 0.39 1.00 1.00 0.32 1.00 0.15 1.00 0.34 3.260 1.556 1.591 0.22 0.92 0.92 0.92 0.92 0.92 0.92 0.92	satd. Flow (prot)	3433	3560	1556	1786	3546	1581	1805	3512		1787	3574	1599
1933 3560 1556 727 3546 1581 615 3512 280 3574 451 565 77 190 750 489 71 746 0 304 745 5	It Permitted	0.95	1.00	1.00	0.39	1.00	1.00	0.32	1.00		0.15	1.00	1.00
= 0.92 0	satd. Flow (perm)	3433	3560	1556	727	3546	1581	615	3512		280	3574	1599
15 565 54 190 750 533 71 668 87 304 745 1	eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1	dj. Flow (vph)	451	265	2 5	190	750	533	71	899	87	304	745	408
1, 451 565	TOR Reduction (vph)	0	0	37	0	0	4	0	တ	0	0	0	232
2% 1% 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	ane Group Flow (vph)	451	292	17	190	750	489	71	746	0	304	745	176
2% 1% 2% 1% 1% 1% 1% 1%	confl. Peds. (#/hr)	2		2	2		2						
Prof. NA Perm pm+pt NA m+ov pm+pt NA	leavy Vehicles (%)	2%	1%	5%	1%	1%	1%	%0	1%	1%	1%	1%	1%
Prot NA Perm pm+pt NA pm+pt NA pm+pt NA pm pm pm pm pm pm pm p	us Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
7 4 3 8 1 5 2 1 6 17.4 37.4 4 8 8 1 5 2 6 17.4 37.4 37.4 43.8 31.9 47.9 38.3 32.7 52.7 43.1 17.4 37.4 37.4 43.8 31.9 47.9 38.3 32.7 52.7 43.1 4.0 7.0 4.0 4.0 32.2 0.27 0.44 0.36 4.0 7.0 4.0 4.0 4.0 32.0 2.7 4.0 7.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 5.0 3.0 5.0	urn Type	Prot	NA	Perm	pm+pt	AA	vo+md	pm+pt	NA		pm+pt	¥	Perm
17.4 37.4 8 8 2 6 17.4 37.4 37.4 43.8 31.9 47.9 38.3 32.7 52.7 43.1 17.4 37.4 37.4 43.8 31.9 47.9 38.3 32.7 52.7 43.1 17.4 37.4 37.4 43.8 31.9 47.9 38.3 32.7 52.7 43.1 17.4 0.31 0.31 0.36 0.27 0.40 0.32 0.27 0.24 0.36 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 3.0 5.0 40 7.0 7.0 7.0 40 7.0 40 7.0 7.0 40 7.0 40 7.1 0.9 4.0 3.0 5.0 3.0 5.0 3.0 5.0 40 7.0 7.0 7.0 40 7.0 40 7.0 7.0 40 7.0 7.0 7.0 40 7.0 40 7.0 7.0 40 7.0 7.0 7.0 40 7.0 40 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40 7.0 7.0 7.0 40	rotected Phases	7	4		က	∞	_	2	2		_	9	
174 374 374 438 319 479 383 32.7 52.7 43.1 174 374 374 374 438 319 479 383 32.7 52.7 43.1 174 374 374 374 438 319 479 383 32.7 52.7 43.1 174 374 374 376 027 044 0.32 0.27 0.44 0.36 40 70 70 40 70 40 0.32 0.27 0.44 0.36 30 50 50 30 50 30 50 30 50 40 70 40 70 40 40 70 0.44 0.36 40 7109 484 370 942 631 251 957 323 1283 40 7109 484 370 044 0.21 0.08 0.01 50 10 0.14 0.10 0.01 0.01 0.01 0.01 50 3.8 0.1 0.1 0.1 0.01 0.01 0.00 50 3.8 0.1 0.1 0.0 0.00 0.00 0.00 70 3.8 0.1 1.2 5.3 5.8 0.6 6.3 3.0 1.5 70 3.4 0.8 0.1 1.2 5.3 5.8 0.6 6.3 3.0 1.5 80 1 1.2 5.3 5.8 0.6 6.3 3.0 1.5 80 1 1.2 5.3 5.8 0.6 6.3 3.0 1.5 80 1 1.2 5.3 5.8 0.6 0.6 0.5 80 1.3 3.5 0.00 0.00 0.00 80 0.01 0.00 0.00 0.00 0.00 0.00 80 0.01 0.00 0.00 0.00 0.00 0.00 0.00 80 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 80 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 80 0.00	ermitted Phases			4	∞		∞	2			9		9
174 374 374 438 319 479 383 32.7 43.1 10.14 0.31 0.31 0.36 0.27 0.44 0.36 4.0 7.0 7.0 4.0 7.0 4.0 0.32 0.27 0.44 0.36 3.0 5.0 5.0 3.0 5.0 3.0 3.0 5.0 4.97 1109 484 370 942 631 251 957 323 1283 4.97 1109 484 370 942 631 251 957 323 1283 6.0.13 0.16 0.01 0.14 0.14 0.01 0.21 0.013 0.21 6.0 1.00 1.00 1.00 1.42 1.18 0.79 0.08 0.78 0.94 0.58 7.0 2.0 1.0 1.0 1.42 1.18 0.79 1.00 1.00 1.51 0.46 8.0 2.0 2.0 2.0 2.0 2.0 9.0 2.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 2.0 1.0 346 288 39.7 53.7 30.5 296 46.6 2.0 1.0 345 2.0 3.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 2.0 2.0 2.0 2.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 1.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ctuated Green, G (s)	17.4	37.4	37.4	43.8	31.9	47.9	38.3	32.7		52.7	43.1	43.1
14 0.31 0.31 0.36 0.27 0.44 0.35 0.27 0.44 0.36 0.27 0.44 0.36 0.27 0.44 0.36 0.36 0.30 0.	ffective Green, g (s)	17.4	37.4	37.4	43.8	31.9	47.9	38.3	32.7		52.7	43.1	43.1
4,0 7,0 7,0 4,0 7,0 4,0 7,0	ctuated g/C Ratio	0.14	0.31	0.31	0.36	0.27	0.40	0.32	0.27		0.44	0.36	0.36
30 50 50 30 30 50 30 50 30 50 30 50 40 40 40 40 40 40 40 40 40 40 40 40 40	learance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
497 1109 484 370 942 631 251 957 323 1283 261 616 0.05 60.21 0.10 0.01 0.21 0.01 0.21 0.01 0.21 0.01 0.21 0.01 0.21 0.02 0.21 0.02 0.	ehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
60.13 0.16 0.05 co.21 0.01 0.01 0.021 co.013 0.021 0.91 0.51 0.03 0.74 0.02 0.02 0.02 50.5 33.8 28.7 27.2 41.0 31.4 29.0 40.3 28.2 31.1 1.00 1.00 1.00 1.42 1.18 0.78 0.08 0.78 0.09 0.029 1.00 1.00 1.00 1.42 1.18 0.78 0.0 40.3 28.2 31.1 1.00 1.00 1.00 1.42 1.18 0.79 1.00 1.51 0.46 1.00 1.00 1.42 5.3 5.8 0.6 6.3 30.2 1.5 1.5 1.6 6.0 1.5	ane Grp Cap (vph)	497	1109	484	370	942	631	251	957		323	1283	574
0.91 0.51 0.03 0.01 0.14 0.21 0.08 0.029 0.91 0.51 0.03 0.51 0.80 0.78 0.28 0.78 0.94 0.58 0.50 3.38 0.51 0.80 0.78 0.28 0.78 0.94 0.58 0.50 3.38 0.51 0.80 0.78 0.28 0.78 0.58 0.50 1.00 1.00 1.00 1.42 1.18 0.79 1.00 1.00 1.52 1.5 0.50 3.46 0.83 0.7 1.5 3.5 8 0.6 6.3 0.22 1.5 0.50 0.34 0.38 0.7 1.2 5.3 5.8 0.6 6.3 0.22 1.5 0.50 0.34 0.38 0.7 1.2 0.5 0.5 0.5 0.5 0.5 0.50 0.34 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.5 0.5 0.5 0.50 0.34 0.35 0.7 0.7 0.5 0.5 0.50 0.34 0.35 0.7 0.7 0.5 0.5 0.50 0.34 0.35 0.7 0.7 0.5 0.5 0.34 0.35 0.7 0.7 0.7 0.7 0.7 0.7 0.5 0.34 0.35 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	/s Ratio Prot	00.13	0.16		0.02	c0.21	0.10	0.01	0.21		c0.13	0.21	
0.91 0.51 0.03 0.51 0.80 0.78 0.28 0.78 0.94 0.58 505 33.8 28.7 27.2 41.0 31.4 29.0 40.3 28.2 31.1 100 1.00 1.00 1.42 1.18 0.79 1.00 1.00 1.51 0.46 201 0.8 0.1 1.2 5.3 5.8 0.6 6.3 30.2 1.5 201 0.8 39.7 53.7 30.5 29.6 46.6 72.9 16.0 E	/s Ratio Perm			0.01	0.14		0.21	0.08			c0.29		0.11
50.5 33.8 28.7 27.2 41.0 31.4 29.0 40.3 28.2 31.1	/c Ratio	0.91	0.51	0.03	0.51	0.80	0.78	0.28	0.78		0.94	0.58	0.31
100 1.00 1.00 1.42 1.18 0.79 1.00 1.00 1.51 0.46 20.1 0.8 0.1 1.2 5.3 5.8 0.6 6.3 30.2 1.5 70.6 34.6 28.8 39.7 53.7 5.8 0.6 6.3 30.2 1.5 70.6 34.6 28.8 39.7 53.7 5.8 0.6 6.3 30.2 1.5 70.6 1.5 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	Jniform Delay, d1	50.5	33.8	28.7	27.2	41.0	31.4	29.0	40.3		28.2	31.1	27.7
201 0.8 0.1 12 5.3 5.8 0.6 6.3 30.2 1.5 70.6 34.6 28.8 39.7 53.7 30.5 29.6 46.6 72.9 16.0 E B E C C D D C C D E B B D C C D D C C D C C D C C D C C D D C C D C C D D C C D D C C D D D C C D D D C C D D D D C C D D D D C C D	rogression Factor	1.00	1.00	1.00	1.42	1.18	0.79	1.00	1.00		1.51	0.46	0.16
706 346 288 397 537 305 296 466 72.9 16.0 E C C D D C C D E B 49.5 43.5 25.0 D D C C D C C C C C C C C C C C C C C	ncremental Delay, d2	20.1	0.8	0.1	1.2	5.3	2.8	9.0	6.3		30.2	1.5	
E C C D D C C D E E	elay (s)	9.07	34.6	28.8	39.7	53.7	30.5	29.6	46.6		72.9	16.0	5.7
43.5 45.1 45.1 D	evel of Service	ш	O	ပ	Ω	□	O	ပ	□		ш	В	¥
D D D D D	opproach Delay (s)		49.5			43.5			45.1			25.0	
Alay 39.5 HCM 2000 Level of Service Capacity ratio 0.91 Sum of lost time (s) In (s) 120.0 Sum of lost time (s) Ultization 85.9% ICU Level of Service 15	pproach LOS		۵			Ω			۵			ပ	
slay 39.5 HCM 2000 Level of Service Capacity ratio 0.91 Sum of lost time (s) n (s) 120.0 Sum of lost time (s) Utilization 85.9% ICU Level of Service 15 15	ntersection Summary												
Capacity ratio 0.91 Sum of lost time (s) h (s) 120.0 Sum of lost time (s) Utilization 85.9% ICU Level of Service 15	ICM 2000 Control Delay			39.5	Ĭ	CM 2000	Level of	Service					
h (s) 120.0 Sum of lost time (s) Utilization 85.9% ICU Level of Service	ICM 2000 Volume to Capac	city ratio		0.91									
Utilization 85.9%	ctuated Cyde Length (s)			120.0	Ñ	sol Jo mr	t time (s)			22.0			
	ntersection Capacity Utilizat	tion		85.9%	0	U Level	of Service	0		ш			
	nalysis Period (min)			15									
	L												

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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Timings 5: St. Augustine Drive & Speers Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

						•	
Lane Group	BE	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	*	₽ ₽	₽	*	F	2	
Traffic Volume (vph)	9	845	1115	25	2	.0	
Future Volume (vph)	10	842	1115	22	2	0	
Turn Type	Perm	N A	ΑA	Perm	Perm	₹	
Protected Phases		4	00			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	5.0	5.0	2.0	5.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0	
Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%	
Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0:0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehide Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0:0	
Recall Mode	C-Min	C-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120	0						
Offset: 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	ed to phase	4:EBTL 8	and 8:WB	T, Start of	Green		
Natural Cycle: 55							
Control Type: Actuated-Coordinated	ordinated						
Splits and Phases: 5: St.	5: St. Augustine Drive & Speers Road	rive & S	peers Ro	þ			
(10)	A 504 (R)	(B)					
12	•						

P.181024010PA Process\3. Analysis\01 - Synchro\FTPM syn BA Group - EFS

Future Total PM (Interim) Upper Kerr Village (8124-01) Queues 5: St. Augustine Drive & Speers Road

	4	†	ţ	4	۶	†
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT
Lane Group Flow (vph)	10	906	1171	56	2	10
v/c Ratio	0.02	0.28	0.36	0.09	90:0	0.05
Control Delay	1.	1.	1.7	9.0	55.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.	1.	1.7	9.0	55.4	0.5
Queue Length 50th (m)	0.2	12.9	2.1	0.0	1.2	0.0
Queue Length 95th (m)	m0.2	m9.3	2.4	0.0	5.3	0.0
Internal Link Dist (m)		472.1	49.4			93.6
Turn Bay Length (m)	20.0					
Base Capacity (vph)	405	3225	3240	465	311	386
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.28	0.36	90:0	0.02	0.03
Intersection Summary						
,						

m Volume for 95th percentile queue is metered by upstream signal.

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P.\81\2401\0PA Process\3. Analysis\01 - SynchroFTPM.syn BA Group - EFS

HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

	4	†	<i>></i>	-	↓	1	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩			₽				*	r	£3,	
Traffic Volume (vph)	9	842	25	0	1115	10	0	0	25	വ	0	10
Future Volume (vph)	10	842	25	0	1115	10	0	0	25	2	0	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Lane Util. Factor	1.00	0.95			0.95				1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
±4	1.00	1.00			1.00				0.86	1.00	0.85	
Fit Protected	0.95	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (prot)	1799	3552			3569				1644	1805	1615	
Fit Permitted	0.24	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (perm)	# 5	7000	0	0	2203	0	0	0	1044	cnol	CIOI	0
Peak-hour factor, PHF Adi Flow (voh)	0.96	0.96	96.0	0.96	0.96	0.96	0.96	0.96	96.0	0.96	96.0	0.96
RTOR Reduction (vph)	0	~	0	0	0	0	0	0	25	0	9	0
Lane Group Flow (vph)	9	902	0	0	1171	0	0	0	-	5	0	0
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehicles (%)	%0	1%	4%	%0	1%	%0	%0	%0	%0	%0	%0	%0
Turn Type	Perm	NA			¥				Perm	Perm	NA	
Protected Phases		4			œ						9	
Permitted Phases	4								2	9		
Actuated Green, G (s)	104.0	104.0			104.0				3.8	3.8	3.8	
Effective Green, g (s)	104.0	104.0			104.0				3.8	3.8	3.8	
Actuated g/C Ratio	0.87	0.87			0.87				0.03	0.03	0.03	
Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
Lane Grp Cap (vph)	387	3078			3093				52	22	21	
v/s Ratio Prot		0.25			c0.33						0.00	
√s Ratio Perm	0.02								0.00	00.00		
v/c Ratio	0.03	0.29			0.38				0.02	0.09	0.01	
Uniform Delay, d1		4.			9.1				56.3	56.4	56.3	
Progression Factor	0.69	0.68			96.0				1.00	9.	0.1	
Incremental Delay, d2	0.1	0.2			0.3				0.1	0.7	0.0	
Delay (s)	8.0	1.2			6				56.4	57.1	56.3	
Level of Service	∢	⋖			∢				ш	ш	ш	
Approach Delay (s)					~ ∞			56.4			9.99	
Approach LOS		∢			∢			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			5.6	¥	HCM 2000 Level of Service	evel of S	ervice		A			
HCM 2000 Volume to Capacity ratio	ty ratio		0.37									
Actuated Cycle Length (s)			120.0	Su	Sum of lost time (s)	ime (s)			12.2			
Intersection Capacity Utilization	on		47.9%	೦	ICU Level of Service	Service			∀			
Analysis Period (min)			15									
c Critical Lane Group												

P.181124010PA Processi3. Analysisi01 - SynchrolFTPM.syn BA Group - EFS

Future Total PM (Interim) Timings

	4		Į	_		
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Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Configurations	<i>y-</i>	44	4₽	r	ليراي	
Traffic Volume (vph)	265	740	1315	10	420	
Future Volume (vph)	265	740	1315	10	420	
Turn Type	pm+pt	NA	NA	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	4	4	
Switch Phase						
Minimum Initial (s)	0.9	38.0	38.0	10.0	10.0	
Minimum Split (s)	12.0	47.6	47.6	15.8	15.8	
Total Split (s)	17.0	102.0	85.0	38.0	38.0	
Total Split (%)	12.1%	72.9%	%2.09	27.1%	27.1%	
Maximum Green (s)	11.0	95.4	78.4	32.2	32.2	
Yellow Time (s)	4.0	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.0	5.9	5.9	2.5	2.5	
Lost Time Adjust (s)	0:0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9	9.9	9.9	5.8	5.8	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	3.5	2.0	2.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0:0	
Recall Mode	None	C-Min	C-Min	None	None	
Walk Time (s)		10.0	10.0			
Flash Dont Walk (s)		31.0	31.0			
Pedestrian Calls (#/hr)		2	2			
Intersection Summary						
Cycle Length: 140						
Actuated Cycle Length: 140						
Offset 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	to phase 2	EBTL ar	d 6:WBT,	Start of	Green	
Natural Cycle: 80						
Control Type: Actuated-Coordinated	rdinated					

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



P.\81\24\01\0PA Process\3. Analysis\01 - SynchroFTPM\syn BA Group - EFS

				S	מט	10 T 2 T 3 T 3 T 3 T 3 T 3 T 3 T 3 T 3 T 3
	4	†	ţ	٠	*	
Lane Group	田田	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	276	177	1386	10	438	
v/c Ratio	0.64	0.26	0.67	0.05	080	
Control Delay	56.9	3.8	22.0	54.2	30.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	26.9	3.8	22.0	54.2	30.8	
Queue Length 50th (m)	32.1	21.7	126.6	5.6	21.7	
Queue Length 95th (m)	68.7	37.0	165.1	7.8	40.5	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	432	2921	2083	415	857	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.26	0.67	0.02	0.51	

P.181124101/OPA Process\3. Analysis\01 - SynchrolFTPM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 6: Speers Road/Comwall Road & Cross Avenue

	2						() - B
	1	†	ţ	1	۶	•	
Movement	EBL	EBT	WBT	WBR	SBL	SBR	
ane Configurations	je.	*	₩		r	果果	
raffic Volume (vph)	265	740	1315	15	9	420	
Future Volume (vph)	265	740	1315	15	10	420	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
otal Lost time (s)	0.9	9.9	9.9		2.8	5.8	
ane Util. Factor	1.00	0.95	0.95		1.00	0.88	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
-Ipb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
せ	1.00	1.00	1.00		1.00	0.85	
-It Protected	0.95	1.00	1.00		0.95	1.00	
Satd. Flow (prot)	1703	3610	3567		1805	2733	
Fit Permitted	0.11	1.00	1.00		1805	1.00	
Dook hour factor DHE	800	900	900	90 0	800	0.06	
Adi Flow (vnh)	276	771	1370	16	10	438	
RTOR Reduction (vph)	0	C	0	2 0	20	267	
ane Group Flow (vph)	276	771	1386	0	10	171	
Confl. Peds. (#/hr)	2			2			
Heavy Vehicles (%)	%9	%0	1%	%0	%0	4%	
urn Type	pm+pt	NA	NA		Prot	Perm	
Protected Phases	2	5	9		4		
Permitted Phases	2					4	
Actuated Green, G (s)	113.3	113.3	81.8		14.3	14.3	
Effective Green, g (s)	113.3	113.3	81.8		14.3	14.3	
Actuated g/C Ratio	0.81	0.81	0.58		0.10	0.10	
Clearance Time (s)	0.9	9.9	9.9		22.0	5.8	
/ehicle Extension (s)	3.5	2.0	9.0		3.0	3.0	
ane Grp Cap (vph)	431	2921	2084		<u>\$</u>	279	
//s Kato Prot	00.12	0.21	c0.39		0.01		
//s Katio Perm	0.40	6	0			90:00	
VC Railo	40.0	07:0	0.00		0.03	0.01	
Junorin Delay, d I	4 00	3.5	0.00		100.4	100	
Progression radio	8. 2	3 5	3.		3.5	00.1	
Delay (s)	797	3.5	21.5		26.0	64.2	
evel of Service	C	A			ц	i III	
Approach Delay (s)	•	10.4	21.5		64.0	ı	
Approach LOS		ш	O		ш		
ntersection Summary							
HCM 2000 Control Delay			24.1	모	:M 2000	HCM 2000 Level of Service	O
HCM 2000 Volume to Capacity ratio	ity ratio		99.0				
Actuated Cycle Length (s)			140.0	Su	Sum of lost time (s)	time (s)	18.4
ntersection Capacity Utilization	on		75.2%	⊴	CU Level of Service	f Service	Q

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HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

Future Total PM (Interim) Upper Kerr Village (8124-01)

Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	10	0	10	10	.0	30	2	230	10	20	655	25
Future Volume (Veh/h)	10	0	10	10	0	30	2	230	10	20	655	25
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	Ŧ	0	,	7	0	32	2	228	=	21	689	28
Pedestrians		20			30						2	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		-			7:						7:	
Percent Blockage		2			က						0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								238			127	
pX, platoon unblocked	0.79	0.79	0.75	0.79	0.79	0.93	0.75			0.93		
vC, conflicting volume	1374	1373	722	1358	1380	298	735			299		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1140	1138	465	1120	1148	531	482			531		
tC, single (s)	7.1	7.0	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)												
1E(s)	3.5	4.5	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	9	100	86	92	100	94	66			88		
cM capacity (veh/h)	122	120	444	131	146	497	733			924		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	22	43	574	736								
Volume Left	=	=	2	21								
Volume Right	7	32	_	56								
SSH	191	290	733	924								
Volume to Capacity	0.11	0.15	0.01	0.02								
Queue Length 95th (m)	5.9	3.9	0.2	0.5								
Control Delay (s)	26.2	19.6	0.2	9.0								
Lane LOS	۵	O	⋖	⋖								
Approach Delay (s)	26.2	19.6	0.2	9.0								
Approach LOS	Ω	O										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization	ation		60.4%	೦	U Level o	ICU Level of Service			ш			
Annah Daniel A												

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HCM Unsignalized Intersection Capacity Analysis
8: Kerr Street & Elmwood Road
Upper Kerr Village (8124-01)

																																								×	
•	SBR		4	40			0.95	45																																ICU Level of Service	
→	SBT		615		_		0.95							None		262																								CU Level	
—	NBT	4	525	525	Free	%0	0.95	553						None		103																								_	
•	NBL		2	2			0.95	2									0.79	724			519	4.3		2.4	8	736	SB 1	689	0	45	1700	0.41	0.0	0.0		0.0			0.5	45.0%	15
<i>></i>	EBR		10	10			0.95	=									0.79	703			492	6.3		3.4	97	429	NB 1	228	2	0	736	0.01	0.2	0.2	∢	0.2					
1	EBL	>	15	15	Stop	%0	0.95	16	32	3.6	[-	က					0.84	1266			920	6.4		3.5	8	235	EB 1	27	16	=	289	0.09	2.3	18.8	ပ	18.8	O			Ē	
	Movement	Lane Configurations	raffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	-ane Width (m)	Valking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Jpstream signal (m)	X, platoon unblocked	/C, conflicting volume	C1, stage 1 conf vol	vC2, stage 2 conf vol	/Cu, unblocked vol	C, single (s)	C, 2 stage (s)	F (s)	on due ue free %	cM capacity (veh/h)	Direction, Lane #	/olume Total	/olume Left	/olume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	ane LOS	Approach Delay (s)	Approach LOS	ntersection Summary	Average Delay	ntersection Capacity Utilization	Analysis Period (min)

P.1811241011OPA Process13. Analysis01 - SynchrolFTPM.syn BA Group - EFS

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Timings 9: Kerr Street & Stewart Street

Future Total PM (Interim) Upper Kerr Village (8124-01)

		ì	•		-	-		•	
ane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
ane Configurations		4		4		4		4	
raffic Volume (vph)	20	9	10	15	10	405	22	202	
-uture Volume (vph)	20	10	10	15	10	405	22	202	
urn Type	Perm	Ϋ́	Perm	Ϋ́	Perm	₹	pm+pt	≨	
Protected Phases		4		∞		2	-	9	
Permitted Phases	4		∞		2		9		
Detector Phase	4	4	∞	∞	7	2	~	9	
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
Minimum Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
otal Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
otal Split (%)	40.0%	40.0%	40.0%	40.0%	46.7%	46.7%	13.3%	%0.09	
Maximum Green (s)	24.6	24.6	24.6	24.6	29.6	29.6	7.0	39.6	
'ellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.3	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	
ost Time Adjust (s)		0.0		0.0		0.0		0:0	
otal Lost Time (s)		5.4		5.4		5.4		5.4	
-ead/Lag					Lag	Lag	Lead		
.ead-Lag Optimize?					Yes	Yes	Yes		
/ehide Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
ime Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
ime To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Recall Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
Valk Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	20	20	20	20	32	32		35	
ntersection Summary									
Sycle Length: 75									
Actuated Cycle Length: 75									
Offset: 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB7	IL, Start o	of Green				
Vatural Cycle: 75									
Sontrol Type: Actuated-Coordinated	rdinated								
	0 0 +000+0	O. Vor Chart 9 Chart Chart	+0						

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Upper Kerr Village (81)
9: Kerr Street & Stewart Street

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9: Kerr Street & Stewart Street	ewart St	reet			Upper Kerr Village (8124-01)
	†	ţ	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	8	109	467	663	
v/c Ratio	0.29	0.29	0.36	0.56	
Control Delay	21.6	10.0	8.0	11.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	8.0	11.0	
Queue Length 50th (m)	8.5	3.4	19.5	33.6	
Queue Length 95th (m)	16.5	13.0	27.7	102.4	
Internal Link Dist (m)	71.6	36.6	141.0	0.62	
Turn Bay Length (m)					
Base Capacity (vph)	444	222	1298	1192	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.36	0.56	
Intersection Summary					

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HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

Future Total PM (Interim) Upper Kerr Village (8124-01)

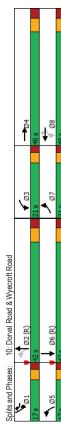
	4	†	<i>></i>	\	↓	4	•	←	*	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	20	9	15	10	15	75	10	405	15	22	202	20
Future Volume (vph)	20	10	15	10	15	75	10	405	15	22	202	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4			5.4			5.4			5.4	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		0.99			96.0			1.00			0.99	
Flpb, ped/bikes		0.98			1.00			1.00			1.00	
Ĕ		0.97			0.30			1.00			0.39	
Fit Protected		0.97			0.99			1.00			1.00	
Satd. Flow (prot)		1661			1562			1856			1802	
Flt Permitted		0.77			0.97			0.98			0.93	
Satd. Flow (perm)		1323			1518			1830			1678	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	#	16	Ξ	16	82	Ξ	440	16	09	549	ß
RTOR Reduction (vph)	0	13	0	0	89	0	0	_	0	0	က	0
Lane Group Flow (vph)	0	89	0	0	41	0	0	466	0	0	099	0
Confl. Peds. (#/hr)	20		15	15		20	32		25	52		35
Heavy Vehides (%)	5%	20%	%0	%0	13%	2%	%0	1%	17%	1%	2%	%0
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	က	0
Turn Type	Perm	Ν		Perm	¥		Perm	¥		pm+pt	NA	
Protected Phases		4			∞			7		_	9	
Permitted Phases	4			œ			2			9		
Actuated Green, G (s)		13.2			13.2			51.0			51.0	
Effective Green, g (s)		13.2			13.2			51.0			51.0	
Actuated g/C Ratio		0.18			0.18			0.68			99.0	
Clearance Time (s)		5.4			5.4			5.4			5.4	
Vehide Extension (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		232			267			1244			1141	
v/s Ratio Prot												
v/s Ratio Perm		c0.05			0.03			0.25			00.39	
v/c Ratio		0.29			0.16			0.37			0.58	
Uniform Delay, d1		26.8			26.2			5.2			6.3	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.0			0.4			0.9			0.7	
Delay (s)		27.8			26.5			0.9			7.0	
Level of Service		O			O			⋖			∢	
Approach Delay (s)		27.8			26.5			0.9			7.0	
Approach LOS		ပ			ပ			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			9.6	ľ	HCM 2000 Level of Service	Level of S	Service		⋖			
HCM 2000 Volume to Capacity ratio	y ratio		0.54									
Actuated Cycle Length (s)			75.0	Sn	Sum of lost time (s)	time (s)			13.8			
Intersection Capacity Utilization	Ę		81.4%	೦	ICU Level of Service	f Service			□			
Analysis Period (min)			15									
c Critical Lane Group												

P.181/2401/OPA Process\(\alpha\). Analysis\(\text{01}\) - Synchro\FTP\(\mathbb{I}\) syn BA Group - EFS

Future Total PM (Interim) Upper Kerr Village (8124-01) Timings 10: Dorval Road & Wyecroft Road

→	SBT	4413	1130	1130	Ϋ́	9		9		20.0	41.0							7.0		Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0					
۶	SBL	F	130	130	Prot	~		_		7.0	12.0							5.0			2.0		0.0		None								
—	NBT	443	1280	1280	Ϋ́	2		2		20.0	41.0							7.0			2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0					
•	NBL	*	95	92	pm+pt	2	2	2		7.0	12.0							2.0					0.0		None								
4	WBR	*-	490	490	bm+ov	Ψ-	∞	_		7.0	12.0														None						of Green		
ţ	WBT		95		Ž			∞			25.0							7.0							None	7.0	11.0	0			RT. Star		
-	WBL	l	99		pm+pt	က	8	က		7.0	12.0							5.0							None						3.9 pue 1.		
†	EBT		225		NA	4		4		10.0	25.0							7.0							None	7.0	11.0	0			Se 2:NBT		
1	EBL	F	385	385	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0:0	None						ed to pha		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cyde Length: 120 Offset: 103 (86%). Referenced to phase 2:NBTL and 6:SBT. Start of Green	Natural Cycle: 90	

10: Dorval Road & Wyecroft Road



P.\81\2401\OPA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Queues 10: Dorval Road & Wyecroft Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

	1	Ť	/	Ļ	1	•	—	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	418	430	65	103	533	103	1434	141	1456	
v/c Ratio	0.98	0.57	0.22	0.47	0.88	0.42	0.85	0.20	0.65	
Control Delay	90.1	31.3	29.9	54.9	45.0	13.8	38.1	39.9	27.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0:0	
Total Delay	90.1	31.3	29.9	54.9	45.0	13.8	38.1	39.9	27.7	
Queue Length 50th (m)	51.2	31.8	10.9	23.0	91.0	8.3	131.5	13.8	91.3	
Queue Length 95th (m)	#82.7	46.3	19.4	37.7	129.7	m12.3 m#155.3	#155.3	23.6	128.5	
Internal Link Dist (m)		155.6		199.3			494.4		672.1	
Turn Bay Length (m)	115.0		145.0			65.0		125.0		
Base Capacity (vph)	428	1001	372	474	209	569	1690	721	2253	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.98	0.43	0.17	0.22	0.88	0.38	0.85	0.20	0.65	
C										
Intersection Summary										
# 95th percentile volume exceeds capacity, queue may be longer	ceeds cap	acity, que	ue may b	e longer.						
Queue shown is maximum after two cycles.	after two	cycles.								

m Volume for 95th percentile queue is metered by upstream signal.

P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total PM (Interim) Upper Kerr Village (8124-01)

		Ť	*	•		,	-	-	_		•	,
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	F	₩		r	*	¥C.	F	4413		K.	4413	
raffic Volume (vph)	385	225	170	09	82	490	92	1280	40	130	1130	210
-uture Volume (vph)	385	225	170	90	92	490	92	1280	40	130	1130	210
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
ane Util. Factor	0.97	0.95		1:00	9:	1.00	1.00	0.91		0.97	0.91	
rpb, ped/bikes	1.00	0.39		1.00	1:00	0.99	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Ē	1.00	95		1.00	1:00	0.85	9.0	1.00		1.00	0.98	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3213	3233		1783	1727	1590	1736	2040		3502	4967	
Flt Permitted	0.95	1.00		0.50	1.00	1.00	0.14	1.00		0.95	1.00	
Satd. Flow (perm)	3213	3233		942	1727	1590	252	5040		3502	4967	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	418	245	185	92	103	533	103	1391	43	141	1228	228
ROR Reduction (vph)	0	126	0	0	0	\$	0	က	0	0	18	0
ane Group Flow (vph)	418	304	0	65	103	479	103	1431	0	141	1438	0
Confl. Peds. (#/hr)	_		4	4		τ-	τ-		_	_		_
Heavy Vehicles (%)	%6	4%	2%	1%	10%	1%	4%	5%	5%	%0	1%	2%
3us Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
urn Type	Prot	Ν		pm+pt	Α	vo+md	pm+pt	A		Prot	¥	
Protected Phases	7	4		က	∞	-	2	2		_	9	
Permitted Phases				00		00	2					
Actuated Green, G (s)	16.0	23.1		25.1	16.1	40.8	20.1	39.2		24.7	53.0	
Effective Green, g (s)	16.0	23.1		25.1	16.1	40.8	20.1	39.2		24.7	53.0	
Actuated g/C Ratio	0.13	0.19		0.21	0.13	0.34	0.45	0.33		0.21	0.44	
Slearance Time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
/ehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
.ane Grp Cap (vph)	428	622		260	231	540	240	1646		720	2193	
/s Ratio Prot	00.13	0.09		0.02	90:0	c0.18	0.04	c0.28		0.04	0.29	
//s Ratio Perm				0.03		0.12	0.14					
//c Ratio	0.98	0.49		0.25	0.45	0.89	0.43	0.87		0.20	99.0	
Jniform Delay, d1	21.8	43.2		38.9	47.8	37.4	22.0	38.0		39.4	26.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.75	0.30		1.00	1.00	
ncremental Delay, d2	37.4	1.3		1.1	5.9	17.1	1.5	4.0		0.3	1.5	
Delay (s)	89.2	44.5		40.0	20.7	54.5	18.1	38.3		39.7	27.9	
evel of Service	ш	Ω		Ω		Ω	ш				O	
Approach Delay (s)		66.5			52.6			36.9			28.9	
Approach LOS		ш									O	
ntersection Summary												
HCM 2000 Control Delay			41.9	ľ	M 2000	HCM 2000 Level of Service	Service					
HCM 2000 Volume to Capacity ratio	ity ratio		0.89									
Actuated Cycle Length (s)			120.0	S	m of los	Sum of lost time (s)			24.0			
ntersection Capacity Utilization	ion		83.9%	⊇	U Level	ICU Level of Service			ш			
Analysis Period (min)			15									

P.18112410110PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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HCM Unsignalized Intersection Capacity Analysis 11: Speers Road & Interim Connection

Future Total PM (Interim) Upper Kerr Village (8124-01)

Control of the cont								
0 875 1650 40 0 75 0 875 1650 40 0 75 175 1650 40 0 75 175 1650 40 0 75 175 1650 90,92 0,92 0,92 0,92 0,92 0,92 0,92 0,	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
me (veh/n) 0 875 1050 40 0 75 me (veh/n) 0 875 1050 40 0 75 me (veh/n) 0 875 1050 40 0 75 me (veh/n) 0 951 1141 43 0 82 met (veh) 0 951 1144 15 met # EB 1 EB 2 WB 1 WB 2 SB 1 met # T700 1700 1700 856 met # T700 1700 1700 1700 856 met # T700 1700 1700 1700 856 met # T700 1700 1700 1700 1700 856 met # T700 1700 1700 1700 1700 1700 856 met # T700 1700 1700 1700 1700 1700 1700 1700	Lane Configurations		++	4₽			×	
me (Vehith) 0 875 1050 40 0 75 In (Vehith) 0 875 1050 40 0 75 Interest (vehith) 0 951 1141 43 0 82 Interest (vehith) 0 951 1141 118 15 Interest (vehith) 0 90 0 90 Interest (vehith) 0 90 0 90 Interest (vehith) 0 90 0 0 90 Interest (vehith) 0 90 0 0 0 90 Interest (vehith) 0 90 0 0 0 0 90 Interest (vehith) 0 90 0 0 0 0 90 Interest (vehith) 0 90 0 0 0 0 90 Interest (vehith) 0 90 0 0 0 0 90 Interest (vehith) 0 90 0 0 0 0 0 90 Interest (vehith) 0 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (veh/h)	0	875	1050	40	0	75	
Free Free Shop 1	Future Volume (Veh/h)	0	875	1050	40	0	75	
14	Sign Control		Free	Free		Stop		
(m)	Grade		%0	%0		%0		
(m) ed (ms) cdage	Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
(m) sed (mis) ckage are (veh) None None age veh) yorlinication At 162 0.81 173 162 0.83 0.81 1638 592 1638 592 1638 592 1648 6.9 1749 1758 592 1758 592 1759 1758 592 1759 1759 1759 1759 1	Hourly flow rate (vph)	0	951	1141	43	0	82	
(veh h) None	Pedestrians							
ead (mis) ckage ser (veh) ser (veh) ser (veh) roontvol toontvol toont	Lane Width (m)							
Activity (veh.h) Anne (veh.h)	Walking Speed (m/s)							
are (veh) ye greveth greveth grad (m) 73 162 0.83 0.81 unblocked 0.81 184 1638 592 1718 15 1718 15 1718 15 1719 170 170 170 170 170 170 170 170 170 170	Percent Blockage							
age veh) 2 (a) (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Right turn flare (veh)							
age veh) 13 162 16 16 16 18 18 18 18 18 18 18 18 18 18 18 18 18	Median type		None	None				
ggral (m) 73 162 0.83 0.81 on blocked on blo	Median storage veh)							
unblocked 0,81 0,83 0,81 on projected 0,82 on projected 0,83 on projected 0,93 on pr	Upstream signal (m)		73	162				
rg volume 1184 1638 592 L contrivol 2 control 749 1118 15 (s) 2.2 3.5 3.3 ee % 100 100 90 (veh.h) 690 167 886 Int 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 0 0 0 Int 0 0 0 0 0 Int 0 0 0 0 Int 0 0 0	pX, platoon unblocked	0.81				0.83	0.81	
Confivol Conficol Confivol Confivol Confivol Confirmed Confivol Confirmed Confivol Confirmed Confirme	vC, conflicting volume	1184				1638	592	
2 conf vol	vC1, stage 1 conf vol							
ked vol 749 1118 15 (s) 4.1 6.8 6.9 (s) 2.2 3.5 3.3 se % 100 90 90 (vehh) 690 167 856 name# EB 1 EB 2 WB 1 WB 2 SB 1 sia 476 476 476 476 476 476 int 0 0 0 0 0 0 0 int 1700 43 82 86 6 6 6 int 0	vC2, stage 2 conf vol							
(s) 4.1 6.8 6.9 (s) 2.2 3.5 3.3 ee% 100 100 90 (venh) 690 167 886 venh) 690 167 886 venh) 690 167 886 venh) 690 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	vCu, unblocked vol	749				1118	15	
(s) 2.2 3.3 8 % 100 100 90 (veh/h) 690 100 90 (veh/h) 690 100 90 (veh/h) 690 100 90 (veh/h) 690 100 90 If 7 856 If 7 476 476 761 423 82 If 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tC, single (s)	4.1				8.9	6.9	
8-% 100 100 90 90 90 90 90 90 90 90 90 90 90 90 9	tC, 2 stage (s)							
se % 100 100 90 90 90 90 90 90 90 90 90 90 90 90 9	F(s)	2.2				3.5	3.3	
(venh) 690 167 856 sine # EB 1 EB 2 WB 1 MB 2 SB 1 all 476 476 761 423 82 ht 0 0 0 0 nt 1 0 0 0 0 nt 2 0 0 0 0 nt 3 82 0 0 nt 4 0 0 0 0 nt 95th (m) 0.0 0.0 0.0 2.4 nt 95th (m) 0.0 0.0 0.0 3.6 A Summary 0.0 0.0 0.0 0.0 nt 2 0.0 0.0 0.0 0.0 nt 2 0.0 0.0 0.0 0.0 nt 2	p0 queue free %	100				100	90	
ane # EB1 EB2 WB1 WB2 SB1 al	cM capacity (veh/h)	069				167	928	
al 476 476 761 423 82 11 0 0 0 0 0 11 0 0 0 4 3 12 0 0 0 0 13 0 0 0 4 3 14 0 0 0 0 4 3 15 0 0 0 0 0 0 0 15 0 0 0 0 0 0 0 15 0 0 0 0 0 0 0 16 0 0 0 0 0 0 0 17 0 0 0 0 0 0 0 18 0 0 0 0 0 0 0 0 18 0 0 0 0 0 0 0 0 19 0 0 0 0 0 0 0 19 0 0 0 0 0 0 0 19 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 3 0 0 0 0 0 0 0 4 0 0 0 0 0 0 0 4 0 0 0 0	Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1		
tit 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Total	476	476	761	423	82		
ht 1700 1700 1700 882 Appacity 0.28 0.48 0.29 0.10 Appl (s) 0.0 0.0 0.0 0.0 0.0 0.0 Appl (s) 0.0 0.	Volume Left	0	0	0	0	0		
Appeir to the proof of the proo	Volume Right	0	0	0	43	82		
Summary	SSH	1700	1700	1700	1700	826		
yth 95th (m) 0.0 0.0 0.0 2.4 sy(s) 0.0 0.0 0.0 9.6 elay (s) 0.0 0.0 9.6 OS A A Summary 0.0 0.4 lay 0.4 0.4 capacity Utilization 41.6% ICU Level of Service	Volume to Capacity	0.28	0.28	0.45	0.25	0.10		
ay (s) 0.0 0.0 0.0 9.6 A elay (s) 0.0 0.0 0.0 9.6 OS Summary 0.4 Isy 0.4 ICU Level of Service	Queue Length 95th (m)	0.0	0.0	0.0	0.0	2.4		
A A	Control Delay (s)	0.0	0.0	0.0	0.0	9.6		
0.0 0.0 9.6 A any 0.4 Illization 41.6% ICU Level of Service	Lane LOS					∢		
A mmary 0.4 0.4 I.S. ICU Level of Service	Approach Delay (s)	0.0		0.0		9.6		
0.4 0.4 ICU Level of Service	Approach LOS					∢		
0.4 0.4 acity Utilization 41.5% ICU Level of Service	Intersection Summary							
Dacity Utilization 41.6% ICU Level of Service	Average Delay			0.4				
r	Intersection Capacity Utiliza	ation		41.6%	0	U Level o	f Service	∢
	Analysis Period (min)			15				

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Ultimate) 1: Kerr Street & Wyecroft Road

	4	>	€	←	→	*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	r	¥.	r	*	₩₽		
Traffic Volume (veh/h)	2	100	220	355	515	125	
Future Volume (Veh/h)	2	100	220	355	515	125	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	2	106	234	378	548	133	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	1272	340	681				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1272	340	681				
tC, single (s)	8.9	2.0	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	96	\$	74				
cM capacity (veh/h)	120	652	206				
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
Volume Total	2	106	234	189	189	365	316
Volume Left	2	0	234	0	0	0	0
Volume Right	0	106	0	0	0	0	133
SSH	120	652	206	1700	1700	1700	1700
Volume to Capacity	0.04	0.16	0.26	0.11	0.11	0.21	0.19
Queue Length 95th (m)	1.0	4.4	7.8	0.0	0.0	0.0	0.0
Control Delay (s)	36.2	11.6	10.3	0.0	0.0	0.0	0.0
Lane LOS	ш	മ	മ				
Approach Delay (s)	12.7		4.0			0.0	
Approach LOS	മ						
Intersection Summary							
Average Delay			7.0				
Average Delay			43 7%	2	CIT I evel of Service	Springs	4
Analysis Period (min)			5 Y	2	5	3	
Aldysis enec (IIII)			2				

P.\81\2401\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

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Timings 2: Kerr Street & Shepherd Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

Lane Group	√ ■ *	† =	WBL WBL	↓ MBT	√ Be	₩ INBT	NBR N	♪ NBI	SBT	SBR	
Lane Configurations Traffic Volume (vph)	- 2	∓ €	115	വ	5 0	1	6 5	- 06	₽	౬౭	
Future Volume (vph)	20	15	115	2	20	280	92	90	440	30	
Turn Type	Perm	N	pm+pt	ΑA	Perm	₹	Perm	pm+pt	₹	Perm	
Protected Phases		4	က	∞		2		_	9		
Permitted Phases	4		∞		7		2	9		9	
Detector Phase	4	4	က	∞	2	2	2	-	9	9	
Switch Phase											
Minimum Initial (s)	2.0	2.0	5.0	5.0	18.0	18.0	18.0	7.0	18.0	18.0	
Minimum Split (s)	22.0	22.0	9.0	22.0	28.2	28.2	28.2	11.0	28.2	28.2	
Total Split (s)	31.0	31.0	20.0	51.0	45.0	42.0	42.0	15.0	57.0	57.0	
Total Split (%)	28.7%	28.7%	18.5%	47.2%	38.9%	38.9%	38.9%	13.9%	52.8%	52.8%	
Maximum Green (s)	27.0	27.0	16.0	47.0	36.8	36.8	36.8	11.0	51.8	51.8	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	4.0	3.3	3.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.9	1.9	1.9	0.0	1.9	1.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.2	5.2	5.2	4.0	5.2	5.2	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes	Yes			
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.5	3.5	3.5	2.5	3.5	3.5	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	Mi	Min	<u>M</u>	None	Mi	Min	
Walk Time (s)	7.0	7.0		7.0	10.0	10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0		11.0	13.0	13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0		0	2	2	2		2	2	
Intersection Summary											
Cycle Length: 108											
Actuated Cycle Length: 58.2											
Natural Cycle: 75											
Control Type: Semi Act-Uncoord	oord										

Splits and Phases: 2: Kerr Street & Shepherd Road

Coluin 1ype: Cellii Act-Olicoold

P.\81\24\01\0PA Process\3. Analysis\01 - SynchrolFTAM.syn BA Group - EFS

Queues

Puture Total AM (Ultimate)
2: Kerr Street & Shepherd Road
Upper Kerr Village (8124-01)

Lane Group EE Lane Group Flow (vph) v/c Ratio 0.	•		\	ţ	,	4	4	ر		1	
Flow (vph)		t	*	,		—	Ł.	•	+	*	
up Flow (vph)	BE	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
	76	49	126	241	22	308	71	66	484	33	
	0.40	0.16	0.30	0.35	0.07	0.25	0.12	0.17	0.28	0.04	
Control Delay 31	8.1.8	14.2	16.0	4.1	18.6	17.8	4.0	6.6	10.4	2.3	
Queue Delay C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay 31	8.1.8	14.2	16.0	4.1	18.6	17.8	4.0	6.6	10.4	2.3	
Queue Length 50th (m) 7	7.7	1.5	9.3	0.3	1.7	13.5	0.0	5.3	15.7	0.0	
Queue Length 95th (m) 21	1.4	10.1	22.1	12.6	7.4	27.5	6.1	14.7	30.6	2.7	
Internal Link Dist (m)		99.1		241.3		143.2			21.4		
Turn Bay Length (m)					20.0		20.0	20.0		20.0	
Base Capacity (vph) 5	220	829	286	1303	282	2314	1016	<u>8</u> 4	2979	1353	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio 0.	0.13	90.0	0.22	0.18	0.04	0.13	0.07	0.15	0.16	0.02	
Informaction Cummons											

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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

Movement FB FBT FBR WBT WBT WBT WBT NBT		1	†	<u>/</u>	/	Ļ	1	•	←	•	۶	→	*
The color of the	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70 15 30 115 5 215 20 280 65 90 440 1900 1900 1900 1900 1900 1900 1900 19	Lane Configurations	*	2		*	2		r	*	*-	F	‡	×-
70 15 30 115 5 215 20 280 65 90 440 400 1900	Traffic Volume (vph)	02	15	30	115	2	215	20	280	65	90	440	8
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	20	15	30	115	2	215	20	280	65	90	440	8
4,0 4,0 4,0 4,0 4,0 4,0 4,0 5,2 5,2 4,0 5,2 1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 100 100 100 100 100 095 100 100 0.95 1.00 1.00 1.00 1.00 0.98 1.00 1.00 0.95 1.00 1.00 1.00 1.00 0.98 1.00 1.00 0.95 1.00 0.90 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.95 1.00 1.01 0.02 0.91 0.92 0.91 0.92 1.99 1.99 1.99 1.02 0.92 0.92 0.91 0.92 0.91 0.91 0.91 0.91 0.91 1.04 1675 9.0 1.05 0.0 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		5.2	5.5	5.2	4.0	2.5	5.2
1.00 1.00 0.98 1.00 0.97 1.00 1.00 0.97 1.00 1.00 0.90 0.9	Lane Util. Factor	1:00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	1.00
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Frpb, ped/bikes	1.00	1.00		1.00	0.98		1.00	1.00	0.97	1.00	1.00	9.
100 0.99 1.00 0.85 1.00 1.00 0.85 1.00 1.00 0.85 1.00 1.00 0.95 1.	Flpb, ped/bikes	1:00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
1035 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	£	1.00	0.90		1.00	0.85		1.00	1.00	0.85	1:00	1.00	0.85
1770 1675 1668 1953 1770 3497 1498 1784 3505 17170 1675 1675 1668 1953 1770 3497 1498 1784 3505 1714 1675 100 155 1	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
0.51 1.00 0.51 1.00 0.48 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Satd. Flow (prot)	1770	1675		1668	1593		1770	3497	1498	1784	3505	1583
194 10/15 201 10/25 201 10/25 201	Fit Permitted	0.61	1.00		0.51	1.00		0.48	1.00	1.00	0.47	00.1	3.7
76 16 17 17 17 17 17 17 17 17 17 17 17 17 17	Satd. Flow (perm)	40.0	0/01		90	282	200	200	2497	084	000	2002	2002
76 28 0 155 20 0 2 308 24 99 484 76 21 0 126 86 0 22 308 24 99 484 2% 2% 8% 2% 0% 2% 2% 2% 5% 1% 3% 0 0 0 0 0 0 0 0 6 0 0 0 0 Perm NA Pm+pt NA Perm NA Perm Pri+pt NA Perm Pri+pt NA Perm N	Peak-nour factor, PHF	76.0	0.92	0.92	126	0.92	18.0	28.0	18:0 800	0.91	6.0	1870	0.92
76 21 0 126 86 0 22 308 24 99 484 2% 2% 2% 8% 2% 0% 2% 5% 5% 1% 3% 0 0 0 0 0 0 0 0 0 0 0 0 Perm NA pm+pt NA Perm NA Perm pm+pt NA Perm Perm NA Perm Prior NA Perm NA Perm NA Perm Prior NA Perm NA Perm NA Perm Prior NA Perm	RTOR Reduction (vnh)	2 0	28 2	3 -	07	155	007	0	9	47	8 -	5 -	3 %
2% 2% 8% 2% 65 5 5 5 5 5 5 5 5 7 3% 1% 3%	Lane Group Flow (vph)	92	21	0	126	98	0	22	308	24	66	484	1
2% 2% 2% 8% 2% 0% 2% 5% 1% 3% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Confl. Peds. (#/hr)				2		2			2	2		
NA	Heavy Vehicles (%)	5%	2%	5%	8%	2%	%0	2%	2%	2%	1%	3%	2%
Perm NA pm+pt NA Perm NA Perm NA Perm NA Perm Perm NA Perm NA Perm NA Perm NA Perm	Bus Blockages (#/hr)	0	0	0	0	0	0	0	9	0	0	0	0
4 4 8 8 2 2 1 1 6 6 9 1 1 6 9 1 1 6 1 6 9 1 1 6 1 6	Turn Type	Perm	NA		pm+pt	¥		Perm	¥	Perm	pm+pt	NA	Perm
4 8 8 2 6	Protected Phases		4		က	00			2		_	9	
9.7 9.7 20.5 20.5 20.3 20.3 20.3 20.9 289 9.7 20.5 20.5 20.3 20.3 20.3 20.9 289 0.16 0.16 0.14 0.34 0.34 0.34 0.34 0.34 0.39 0.39 14.0 4.0 4.0 4.0 4.0 5.2 5.2 5.2 4.0 5.2 14.4 272 397 547 302 1191 510 528 1758 0.01 0.00 0.07 0.07 0.02 0.02 0.02 0.41 0.08 0.32 0.16 0.09 0.02 0.04 1.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Permitted Phases	4			∞			2		2	9		9
9.7 9.7 20.5 20.5 20.3 20.3 20.3 20.9 299 0.16 0.16 0.34 0.34 0.34 0.34 0.34 0.34 0.34 0.34	Actuated Green, G (s)	9.7	9.7		20.5	20.5		20.3	20.3	20.3	29.9	29.9	29.9
U10 U16	Effective Green, g (s)	9.7	9.7		20.5	20.5		20.3	20.3	20.3	29.9	29.9	29.9
4.0 4.0 4.0 3.0 3.2 3.2 3.2 3.2 3.2 3.2 3.2 3.2 3.5 4.0 3.5 <td>Actuated g/C Ratio</td> <td>0.16</td> <td>0.16</td> <td></td> <td>0.34</td> <td>0.34</td> <td></td> <td>0.34</td> <td>0.34</td> <td>0.34</td> <td>0.50</td> <td>0.50</td> <td>0.50</td>	Actuated g/C Ratio	0.16	0.16		0.34	0.34		0.34	0.34	0.34	0.50	0.50	0.50
184 272 397 547 302 153 559 559 550 500 500 500 500 500 500 500	Clearance Time (s)	0.4	0.4		0.4	0.4		2.2	5.2	5.2	4.0	5.2	2.0
COOT 0.01 0.04 0.05 0.09 0.09 0.00 0.00 0.00 0.00 0.00	Verifice Exterision (s)	0.0	0.0		20.0	0.0		0.0	4404	0.0	6.2	4750	0.0
c0.07 0.01 0.02 0.03 0.03 0.03 0.03 0.03 0.03 0.04 0.03 0.03	Larie Grp Cap (vpri)	₹	717		760	100		302	<u></u>	010	070	00 /	5
041 0.08 0.32 0.16 0.07 0.26 0.05 0.19 0.28 C 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	ws Ratio Prot	20.02	0.0		0.03	0.00		0.00	60.0	0.00	0.02	3.	0 0
22.4 21.2 14.0 13.6 13.3 14.2 13.2 8.0 8.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	v/c Ratio	0.41	0.08		0.32	0.16		0.07	0.26	0.05	0.19	0.28	0.02
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	22.4	21.2		14.0	13.6		13.3	14.2	13.2	8.0	9.6	7.5
15 0.1 0.5 0.1 0.1 0.1 0.0 0.1 0.1 0.1 0.1 0.1 0.1	Progression Factor	1:00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
23.9 21.3 14.5 13.1 13.4 14.3 13.2 8.1 8.7	Incremental Delay, d2	7.5	0.7		0.5	0.1		0.5	0.1	0.0	0.1	0.1	0.0
C C B B B B A A 14.0 14.1 8 B C C B B B A A 14.0 14.1 8 B C C B B B B A B B A A 14.0 14.1 8 B B A B B A B B A A B B B A B B A B B A B B A B B A B B B A B B B A B B B A B B B B A B B B B A B B B B A B B B B A B B B B B A B B B B B A B B B B B A B B B B B B A B B B B B B A B B B B B B A B B B B B B B A B B B B B B A B B B B B B A B B B B B B A B B B B B B A B B B B B B A B B B B B B A B B B B B B A B B B B B A B B B B B A B B B B A B B B B B A B B B B B B B B A B	Delay (s)	23.9	21.3		14.5	13.7		13.4	14.3	13.2	χ. -	8.7	7.5
22.9 14.0 14.1 C B B 12.5 HCM 2000 Level of Service B 12.5 HCM 2000 Level of Service B 59.6 Sum of lost time (s) 17.2 zation 63.7% ICU Level of Service B	Level of Service	O	ပ		ω	ш		ω	ш	ш	∢	∢	⋖.
C B B 12.5 HCM 2000 Level of Service B 23.5 Sum of lost time (s) 17.2 2ation 63.7% ICU Level of Service B 15	Approach Delay (s)		22.9			14.0			14.1			8.5	
12.5 HCM 2000 Level of Service 0.35 0.35 Sum of lost time (s) 2ation 63.7% ICU Level of Service 15	Approach LOS		O			ш			m			∢	
12.5 HCM 2000 Level of Service 0.35 Sum of lost time (s) 29.6 Sum of lost time (s) 2ation 63.7% ICU Level of Service	Intersection Summary												
25.6 Sum of lost time (s) 59.6 Sum of lost time (s) 28.7% ICU Level of Service 15	HCM 2000 Control Delay	oitorvito		12.5	H	CM 2000	Level of §	Service		ω			
29.0 Sum of ostume (s) zation 63.7% ICU Level of Service 15	noin zooo volulile to capa	icity Latio		5.5	ć	1 - 1	(-)			71			
15	Aduated Cycle Lengtn (s) Intersection Canacity Utiliza	tion		0.60	2 2	III evel o	f Service			7. H			
	Analysis Period (min)			15	2	200	200			ב			
	Critical and Groun			2									

P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Future Total AM (Ultimate) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	<i>></i>	-	ţ	4	•	—	•	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩	¥C	<u></u>	₩	*	<i>y</i> -	+	×.	1	*	W.
Traffic Volume (vph)	40	740	6	195	220	195	100	130	370	360	180	85
Future Volume (vph)	40	740	6	195	220	195	100	130	370	360	180	85
Turn Type	pm+pt	ΑN	Perm	pm+pt	ΑN	Perm	pm+pt	ΑN	Perm	Prot	≨	Perm
Protected Phases	~	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Detector Phase	~	9	9	2	2	7	7	4	4	က	∞	∞
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Total Split (s)	11.0	42.0	45.0	14.0	45.0	45.0	11.0	40.0	40.0	24.0	53.0	53.0
Total Split (%)	9.2%	35.0%	32.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7	33.7	21.0	46.7	46.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0:0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0:0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	Q-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		15	15		35	35		35	35
Intersection Summary												

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Offset 43 (35%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Kerr Street & Speers Road



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Lane Group									Š		oppei neii viilage (012+-01	
Lane Group	4	t	>	>	Į.	✓	<	←	*	•	-	*
الطمين بيجاتا مينجيل جمح ا	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Laire Group Flow (vpr)	47	860	105	227	640	227	116	151	430	419	209	8
v/c Ratio	0.13	0.77	0.19	0.77	0.46	0.31	0.29	0.34	0.91	08.0	0.34	0.17
Control Delay	16.2	35.1	4.7	41.1	30.0	4.9	20.5	38.3	20.8	8.09	30.1	5.
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	35.1	4.7	41.1	30.0	4.9	20.5	38.3	20.8	8.09	30.1	5.5
Queue Length 50th (m)	3.8	106.2	1.4	32.8	65.9	0.0	14.4	28.1	61.9	49.1	34.4	0.0
Queue Length 95th (m)	10.1	124.4	5.4	#20.9	79.3	14.3	23.0	43.5	#102.8	62.2	49.3	9.6
Internal Link Dist (m)		145.3			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	376	1119	220	293	1387	738	410	517	519	583	718	648
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	S
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.13	0.77	0.19	0.77	0.46	0.31	0.28	0.29	0.83	0.72	0.29	0.15

Intersection Summary

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

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total AM (Ultimate)	Upper Kerr Village (8124-01)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
		,

	1	†	~	>	Ļ	4	•	-	4	۶	-	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	44	*	<u>r</u>	44	*	je.	+	¥C	1	+	*
Traffic Volume (vph)	40	740	6	195	220	195	100	130	370	360	180	85
Future Volume (vph)	9	740	8	195	220	195	100	130	370	360	180	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.9	2.9	3.0	2.9	2.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	9.6	0.95	1.00	1.00	0.95	1.00	0.1	0.1	1.00	0.97	1.00	1.00
Frpb, ped/bikes	8.5	8.5	0.90	8.5	8.5	0.30	00.1	8.5	0.93	00.1	00.1	0.95
ripp, ped/bikes	3 5	3 5	00.1	3 5	3 5	9.0	0.00	3 5	00.1	9.6	8.6	00.1
7.T	9.9	8.5	0.00	9.9	8.5	0.0	9.9	0.1	0.00	00.1	00.1	0.00
FIL Protected	0.30	0.10	1.00	0.32	0.10	1.00	0.30	00.1	00.1	0.90	00.1	1.00
Satd. Flow (prot)	88/	33/8	143/	/001	8545	1490	0/01	1844	1429	3335	243	101
Fit Permitted	0.38	3.0	00.1	0.14	1.00	3.6	0.63	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	723	3378	1437	255	3438	1495	1106	1844	1429	3335	1845	1511
Peak-hour factor, PHF	98.0	0.86	0.86	0.86	0.86	0.86	0.86	0.86	98.0	0.86	0.86	0.86
Adj. Flow (vph)	47	860	105	227	640	227	116	151	430	419	509	66
RTOR Reduction (vph)	0	0	2	0	0	137	0	0	125	0	0	99
Lane Group Flow (vph)	47	860	32	227	640	6	116	151	302	419	509	33
Confl. Peds. (#/hr)	15		9	9		15	20		35	32		20
Heavy Vehicles (%)	%0	%9	%/	%/	2%	4%	%9	1%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	ΑN	Perm	pm+pt	ΑN	Perm	pm+pt	ΑĀ	Perm	Prot	¥	Perm
Protected Phases	-	9		2	2		7	4		က	œ	
Permitted Phases	9		9	2		2	4		4			∞
Actuated Green, G (s)	45.6	39.7	39.7	299	47.8	47.8	37.1	29.3	29.3	18.8	40.3	40.3
Effective Green, g (s)	45.6	39.7	39.7	29.7	47.8	47.8	37.1	29.3	29.3	18.8	40.3	40.3
Actuated g/C Ratio	0.38	0.33	0.33	0.47	0.40	0.40	0.31	0.24	0.24	0.16	0.34	0.34
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	327	1117	475	287	1369	262	378	450	348	522	619	202
v/s Ratio Prot	0.01	0.25		60.00	0.19		0.02	0.08		c0.13	0.11	
v/s Ratio Perm	0.05		0.05	c0.28		90.0	0.02		c0.21			0.02
v/c Ratio	0.14	0.77	0.02	0.79	0.47	0.15	0.31	0.34	0.88	0.80	0.34	0.07
Uniform Delay, d1	23.7	36.0	27.5	23.2	26.7	23.1	30.8	37.3	43.6	48.8	29.9	27.1
Progression Factor	0.82	0.80	0.79	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	2.0	0.3	13.4	-	0.5	0.3	9.0	21.7	8.5	0.4	0.1
Delay (s)	19.6	33.9	21.9	36.6	27.8	23.7	31.1	37.9	65.3	57.3	30.3	27.1
Level of Service	ш	O	O	Ω	O	O	O	Ω	ш	ш	O	O
Approach Delay (s)		32.0			28.8			53.7			45.4	
Approach LOS		O			O			Ω			Ω	
Intersection Summary												
HCM 2000 Control Delay			38.0	ヹ	HCM 2000 Level of Service	Level of (Service		۵			
HCM 2000 Volume to Capacity ratio	y ratio		0.84									
Actuated Cyde Length (s)			120.0	S	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	u		73.4%	೦	ICU Level of Service	f Service			Ω			
Analysis Period (min)			5									
c Critical Lane Group												

P.\81\24\01\0PA Process\3. Analysis\01 - SynchroFTAM.syn BA Group - EFS

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Future Total AM (Ultimate) Upper Kerr Village (8124-01) Timings 4: Dorval Road & Speers Road

	1	†	<u>/</u>	-	↓	4	•	—	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	*	₩	W.	F	₩	*	F	4₽	*	44	*	
Traffic Volume (vph)	415	610	40	90	415	345	20	822	270		255	
Future Volume (vph)	415	610	40	90	415	345	20	822	270		255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	≨	vo+mq	pm+pt	₹	pm+pt		Perm	
Protected Phases	7	4		က	∞	~	2	2	~	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	80	-	2	2	~	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0	13.0	45.0	12.0	11.0	45.0	12.0	46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	10.0%	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0	8.0	7.0	38.0	8.0	39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
cycle Edigin: :=c												

Solits and Phases: 4. Dorval Road & Speers

Advance Cycle Length: 120
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 125
Control Type: Actualed-Coordinaled

±₽04	50 s	*	42 s	
€03	13.s	10	21s	
Ø2 (R)	S	™_Ø6 (R)		
6 01	12 s 45	ф ⁶ 50 🔪	11s 46s	
	→ ↑ Ø2 (R)	45s 13s	45 62 (R) 62 (R) 62 62 62 62 62 62 62 62 62 62 62 62 62	

P.(81)24(01)OPA Process\3. Analysis\01 - Synctro\FTAM\syn BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

	1	†	>	-	ţ	4	•	←	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	451	663	43	88	451	375	9/	1076	293	582	277
v/c Ratio	0.94	0.70	60.0	0.39	0.65	0.59	0.19	0.97	0.95	0.39	0.37
Control Delay	79.4	42.3	0.3	21.4	39.1	13.5	18.2	9.09	0.89	10.4	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.4	42.3	0.3	21.4	39.1	13.5	18.2	9.09	0.89	10.4	2.9
Queue Length 50th (m)	54.8	74.2	0.0	8.9	42.5	36.3	9.8	129.7	35.8	38.5	0.0
Queue Length 95th (m)	#85.1	83.8	0:0	13.0	59.5	51.3	19.6	#174.3 m#135.4	#135.4	42.9	m12.9
Internal Link Dist (m)		412.3			472.1			621.6		494.4	
Turn Bay Length (m)	0.09		0.09	85.0		22.0	0.07		110.0		
Base Capacity (vph)	481	1192	009	256	949	639	391	1111	307	1474	751
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.56	0.07	0.38	0.48	0.59	0.19	0.97	0.95	0.39	0.37
Information Cummony											

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

	1	†	<u> </u>	-	Ļ	1	•	—	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	*	¥.	r	¥	¥C.	r	₩		F	*	¥.
Traffic Volume (vph)	415	610	40	06	415	345	20	855	135	270	535	255
Future Volume (vph)	415	610	40	90	415	345	20	855	135	270	535	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1:00	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	1.00	0.98
Flpb, ped/bikes	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1785	3476		1687	3539	1417
Flt Permitted	0.95	1.00	1.00	0.32	1.00	1.00	0.43	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3400	3329	1482	223	3256	1494	813	3476		169	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	663	43	86	451	375	9/	929	147	293	582	277
RTOR Reduction (vph)	0	0	31	0	0	20	0	10	0	0	0	163
Lane Group Flow (vph)	451	663	12	86	451	302	9/	1066	0	293	285	114
Confl. Peds. (#/hr)	2					2	2					5
Heavy Vehides (%)	3%	%8	%6	%6	10%	%/	1%	2%	%0	4%	2%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	¥	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	A	Perm
Protected Phases	7	4		က	∞	_	2	2		_	9	
Permitted Phases			4	80		∞	2			9		9
Actuated Green, G (s)	17.0	34.0	34.0	34.2	25.6	43.0	44.2	38.0		59.4	49.2	49.2
Effective Green, g (s)	17.0	34.0	34.0	34.2	25.6	43.0	44.2	38.0		59.4	49.2	49.2
Actuated g/C Ratio	0.14	0.28	0.28	0.29	0.21	0.36	0.37	0.32		0.49	0.41	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	5.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	481	943	419	236	694	535	349	1100		303	1450	580
v/s Ratio Prot	c0.13	c0.20		0.03	0.14	0.08	0.01	0.31		00.14	0.16	
√s Ratio Perm			0.01	0.09		0.12	0.07			90.34		0.08
v/c Ratio	0.94	0.70	0.03	0.45	0.65	0.57	0.22	0.97		0.97	0.40	0.20
Uniform Delay, d1	51.0	38.5	31.1	32.7	43.1	31.0	25.0	40.4		36.3	25.0	22.7
Progression Factor	1.00	1.00	1.00	0.79	0.82	0.52	1.00	1.00		1.05	0.37	0.56
Incremental Delay, d2	78.0	3.0	0.7	1.2	2.8	4. [0.3	50.6		35.0	9.0	0.5
Delay (s)	6.0	41.5	رات ا	77.1	 88	0./	25.3	0.1.0		73.1	χ. .α	13.4
Level of Service	ш	□	ပ	ပ	□	ω	O	ш		ш	⋖	ш
Approach Delay (s)		54.9			28.6			28.7			26.8	
Approach LOS		Ω			O			Ш			O	
Intersection Summary												
HCM 2000 Control Delay			43.0	Ĭ	CM 2000	HCM 2000 Level of Service	Service					
HCM 2000 Volume to Capacity ratio	ity ratio		0.94									
Actuated Cycle Length (s)			120.0	જ	Sum of lost time (s)	time (s)			22.0			
Intersection Capacity Utilization	ou		87.3%	೦	U Level	ICU Level of Service	0		ш			
Analysis Period (min)			15									
c Critical Lane Group												

P.181124010PA Processi3. Analysisi01 - SynchrolFTAM.syn BA Group - EFS

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P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Timings Future Total AM (Ultimate) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

o. or. Magazinio privo di podio i vodo	5	5	2001				` . O
	1	†	↓	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	*	₩.	₩.	*	<u>, </u>	43	
Traffic Volume (vph)	22	820	730	20	15	0	
Future Volume (vph)	22	820	730	20	15	0	
Turn Type	Perm	Ϋ́	Ϋ́	Perm	Perm	NA	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	82.0	82.0	82.0	38.0	38.0	38.0	
Total Split (%)	68.3%	%8.3%	68.3%	31.7%	31.7%	31.7%	
Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	31.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	Q-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	d to phase	4:EBTL	and 8:WB	T, Start of	Green		
Natural Cycle: 50							
Control I ype: Actuated-Coordinated	rdinated						

Splits and Phases: 5: St. Augustine Drive & Speers Road



P.18112401(DPA Processi3. Analysisi01 - SynchrolFTAM.syn BA Group - EFS

Queues 5: St. Augustine Drive & Speers Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

→	SBT	176	0.63	16.2	0.0	16.2	0.0	15.3	93.6		292	0	0	0	0.31		
۶	SBL	17	0.15	55.1	0.0	55.1	3.9	10.7			476	0	0	0	0.04		al.
•	NBR	23	0.10	0.8	0.0	8.0	0.0	0.0			519	0	0	0	0.04		am sign
Ļ	WBT	841	0.29	5.1	0.0	5.1	34.4	4.1	42.5		2870	0	0	0	0.29		by upstre
†	EBT	983	0.34	1.6	0.0	1.6	13.8	m15.0	472.1		2869	0	0	0	0.34		metered
1	EBL	63	0.12	1.7	0.0	1.7	7.5	m2.2		20.0	258	0	0	0	0.12		ntile queue is
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary	m Volume for 95th percentile queue is metered by upstream signal

P.181124010PA Processi3. Analysisi01 - SynchrolFTAM.syn BA Group - EFS

> Synchro 11 Report Page 11

HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

Movement	EBL EBI EBR WBL W 5 5 880 15 5 800 15 0 1900 1900 1900 19 1.00 1.00 0.99 1.00 1.00 0.95 1.00 0.95 1.00 0.95 0.98 0.88 0.88 0.88 0 0.88 0.88 0.88 0 0.89 0.00 0.90 0.0	WBL				0	
1	55 850 15 0 15 0 15 0 15 0 15 0 15 0 15	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				5 444045450	
55 850 15 0 730 10 0 0 20 15 0 1900	55 850 15 0 1900 1900 1910 1910 1910 1910 19	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				£ 44494545	
55 850 15 0 730 10 0 20 15 0 190 1900 19	55 850 15 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.000				£ 1-1-01-5-15-0	
1900 1900	1900 1900 1900 1100 1100 1100 1100 1100	0.00 88.0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				1 1 1 1 2 1 2 1 2 1	
59 59 59 6.3	5.9 5.9 1.00 1.00 1.00 1.00 1.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.0				
1,00 0,95 0,95 0,95 0,95 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	1.00 0.95 1.00 1.00 0.99 1.00 0.99 1.00 1.796 2430 0.33 1.00 0.38 1.00 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0	0.0000000000000000000000000000000000000	3.0				
1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	88.0 0 0 0 0 % 0 0 0 0 0 %	0.0				
1,00	0.99 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.33 1.00 0.33 1.00 0.88 0.88 0.88 0.8 0.89 0.80 0.0 0.00 0 0 0	880 0 0 0 0 % 0 0 0 0 0 %	0.0			4045450	
1,00 1,00 1,00 1,00 0,85 1,00 0,85 1,00 1,00 0,85 1,00 1,00 0,85 1,00 1,00 0,85 1,00 1,00 0,95 1,00 0,33 1,00 1,00 0,95 1,00 0,35 1,00 1,00 0,95 1,00 0,35 1,00 0,95 1,00 0,95 1,00 1,00 0,95 1,00 1,00 0,95 1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.0			012120	
0.95 1,00 <th< td=""><td>1786 100 178 1</td><td>88.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>0.6</td><td></td><td></td><td>7 7 7 8</td><td></td></th<>	1786 100 178 1	88.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0.6			7 7 7 8	
1796 3430 3430 165 1805 1615 1796 3430 3430 1616 6.31 3430 3430 1616 6.31 3430 3430 1616 6.38 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0	1796 3430 33 6 34 6 34 6 34 6 34 6 34 6 34	8.0 0 0 0 0 % 0 0 0 0 0 %	3.0			2 - 2 8	
0.33 1.00 1.00 1.00 1.00 1.00 1.00 1.00	633 100 631 3430 681 0.88 0.88 0.88 0.88 0.88 0.88 0.8 0.8 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.0			7 2 8	
631 3430 3430 1615 1615 1615 1616 1618	631 3430 6.88 0.88 0.88 0.88 0.88 0.88 0.88 0.88	88.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3.0			20	
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Perm NA NA Perm Per	Perm NA 100.4 110.	NA NA 100.4 100.4 0.04 3.0 2869 0.259					
4	100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.4 100.2 2.2 2.2 1.5 1.5 1.5 A A A A A 1.5 1.5 A A 1.5 1.5 1.5 A A 1.5 1.5 1.5 A A 1.5 1.5 1.5 A A 4 1.5 1.5 A A 4 1.5 1.5 A A 4 1.5 A 1.5 A 4 1.5 A 4 4 1.5 A 4 4 1.5 A 4 4 1.5 A 4 4 4 1.5 A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	100.4 100.4 100.8 0.84 5.9 3.0 2.869 0.25				2	
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5.9 5.9 5.9 5.9 6.3 6.3 6.3 6.3 5.7 2869 2869 96 111 0.10 0.29 0.29 0.01 0.15 1.8 2.2 2.16 1.00 1.00 0.65 0.57 2.16 1.00 1.00 1.5 1.5 4.8 52.9 54.0 1.5 1.5 4.8 52.9 1.5 1	5.9 5.9 3.0 3.0 3.0 3.0 0.10 0.29 0.12 0.34 1.8 2.2 0.057 0.3 0.2 1.5 1.5 A A A A A A A A A A	5.9 3.0 2869 0.25			90.0		
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18 22 2.1 52.9 53.3 0.55 0.57 2.16 1.00 1.00 1.00 0.2 0.3 0.2 0.2 0.1 0.0 1.00 1.00 1.5 1.5 4.8 52.9 54.0 1.5 4.8 52.9 54.0 1.5 4.8 52.9 1.5 4.8 52.9 1.5 A A D D D D D D D D D D D D D D D D D	18 22 0.0 0.57 0.3 0.2 1.5 1.5 A A A A A	0.29			0.01		
100 100	0.65 0.57 0.3 0.2 1.5 1.5 A A 1.5 A A A A A A A A A A A A A A A A A A A	2.1			52.9		
d2 0.3 0.2 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	d2 0.3 0.2 1.5 1.5 A A 1.5 A A	2.16			1.00		
1.5 1.5 4.8 52.9 54.0 A A A A A A A B S2.9 54.0 1.5 4.8 52.9 B D D D D D D D D D D D D D D D D D D	1.5 A A 1.5 A A	0.2			0.1		
A A A A A D D D 1.5 4.8 52.9 D D 1.5 4.8 52.9 D D 1.5 A A D Delay 82 HCM/2000 Level of Service A A to Capacity ratio 0.33 HCM 2000 Level of Service A A ght (s) 120 Sum of lost time (s) 12.2 A 1.2 A A D 1.2 A A B D 1.2 A B A B D 1.3 A B B B B B B B B B B B B B B B B B B	۸ ۲. م	4.8			52.9		
1.5 4.8 52.9 A A D Delay 8.2 HCM.2000 Level of Service A Cocapacity ratio 0.33 Sum of lost time (s) 12.0 Sum of lost vice A CU Level of Service A 14.9% ICU Level of Service A 15.0 Sum of lost vice A	1.5 A	A			□		
A A A D / A A A D / Bay / Capacity ratio 0.33 D (s) 120.0 Sum of lost time (s) Ultization 49.4% ICU Level of Service 150.10 Sum of lost time (s) 160.10 Sum of lost time (s) 170.0 Sum of lost time (s) 170.0 Sum of lost time (s)	Approach I O.S	4.8		52.9		53.7	
189 8.2 HCM 2000 Level of Service Capacity ratio 0.33 120.0 Sum of lost time (s) 150.0 Sum	000	A		٥		D	
slay 8.2 HCM 2000 Level of Service Capacity ratio 0.33 Sum of lost time (s) h (s) 120.0 Sum of lost time (s) Ullization 49.4% ICU Level of Service 15 15 15	Intersection Summary						
Capacity ratio 0.33 120.0 Sum of lost time (s) 4.4% ICU Level of Service 15 15 15 15 15 15 15 15 15 15 15 15 15	lav 8.2		Level of Service		<		
h (s) 120.0 Sum of lost time (s) Utilization 49.4% ICU Level of Service	0.33						
Utilization 49.4% ICU Level of Service	120.0		time (s)		12.2		
15	49.4%		of Service		⋖		
	Analysis Period (min) 15	15					

P.\81\2401\OPA Process\3. Analysis\01 - Synchro\FTAM\syn BA Group - EFS

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Future Total AM (Ultimate) Upper Kerr Village (8124-01) Timings 6: Speers Road/Comwall Road & Cross Avenue

Traffic Volume (vph) 205 1260 625 5 245 Traffic Volume (vph) 205 1260 625 5 245 Tutur Volume (vph) 205 1260 625 5 245 Tutur Volume (vph) 205 1260 625 5 245 Tutur Volume (vph) 205 1260 625 5 245 Futur Volume (vph) 205 1260 625 5 245 Permitted Phases 2 6 4 4 Switch Phase 5 2 6 4 4 Switch Phase 6 0 38 0 10 0 10 0 Minimum Initial (s) 6 0 38 0 38 0 10 0 10 0 Total Split (%) 250% 77.9% 52.9% 22.1% Maximum Green (s) 2.0 2.9 2.5 25.7 Yellow Time (s) 2.0 2.9 2.5 2.5 Lost Time (s) 2.0 2.9 2.5 2.5 Lost Time (s) 2.0 2.9 2.5 2.5 Version Time (s) 2.0 2.9 2.5 2.5 Lost Time (s) 6 0 6.6 6.6 5.8 5.8 Verial Lost Time (s) 0.0 0.0 0.0 0.0 Time Before Extension (s) 3.5 3.0 3.0 Time Before Extension (s) 3.5 3.0 3.0 Time Before Extension (s) 3.5 3.0 3.0 Recall Node None C-Min C-Min None None Walk (s) 11 me 50 Pedestrian Calls (#hr) 5 5 Minimum Gap (s) 3.0 3.0 3.0 Recall Node C-Min C-Min None None Walk (s) 11 me 50 Pedestrian Calls (#hr) 5 5 Minimum Gap (s) 3.0 3.0 3.0 Recall Node C-Min C-Min None None C-Min C-Min None None Walk (s) 11 me 50 Pedestrian Calls (#hr) 5 5 Minimum Calls (#hr) 5 5 5 Minimum Calls (#hr) 5 5 5 Minimum Calls (#hr) 6 5 8	
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205 1260 625 5 5 6 4 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	
None C-Min None Non	
5 2 6 4 5 2 6 4 5 2 6 4 6 380 380 10.0 120 47.6 47.6 15.8 35 0 109.0 74.0 31.0 25.0% 77.9% 52.9% 22.1% 22.2 29 102.4 67.4 25.2 29 102.4 67.4 25.2 29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
5 2 6 4 6 0 38.0 38.0 10.0 12.0 47.6 47.6 15.8 35.0 109.0 74.0 31.0 25.0% 77.9% 52.9% 22.1% 22.2 29.0 102.4 67.4 25.2 20.0 102.4 67.4 25.2 20.0 0.0 0.0 0.0 25.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	
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120 476 476 158 136 136 140 109.0 74.0 13.0 25.0% 77.9% 25.9% 22.9% 22.9% 22.9% 22.9 2.9 2.5 2.5 2.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
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250% 77.9% 52.9% 22.1% 22.9 102.4 67.4 25.2 4 20.0 102.4 67.4 25.2 2 20.0 2.9 2.5 2.0 2.9 2.5 2.0 2.9 2.5 2.0 2.9 2.5 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	
290 102.4 67.4 25.2 2 4.0 3.7 3.3 2.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 3.5 5.0 5.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	
4,0 3,7 3,3 3,5 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0	
2.0 2.9 2.9 2.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	
6.0 6.6 6.5 5.8 Lead Yes Yes Yes 3.0 3.0 0.0 0.0 0.0 None C-Min C-Min None N 3.0 3.10 3.10 3.10 3.10 3.10 3.10	
6.0 6.6 6.6 5.8 Leag Yes Yes Yes 3.5 5.0 5.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.0 0.0 0	
Lead Lag Yes Yes Yes 3.5 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	
Yes Yes Yes 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	
35 50 30 30 30 30 30 00 00 00 00 00 00 00 None C-Min C-Min None N 100 31.0 5 5	
30 30 30 30 30 00 00 00 00 00 00 00 00 0	
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	
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None C-Min C-Min None 10.0 10.0 31.0 31.0 5 5	
10.0 31.0 5	
31.0 31.0	
യ	
Intersection Summary Oycle Length: 140	
Öycle Length: 140	
Actuated Cycle Length: 140	
Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
Natural Cycle: 80	

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Future Total AM (Ultimate) Queues

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

6: Speers Road/Comwall Road & Cross Avenue	rnwall F	oad &	Cross	Aven	ne.	Upper Kerr Village (8124-01)
	1	t	ţ	ၨ	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1482	759	9	288	
v/c Ratio	0.43	0.51	0.30	0.02	0.63	
Control Delay	4.5	4.0	7.3	9.09	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.5	4.0	7.3	9.09	12.9	
Queue Length 50th (m)	9.4	47.2	34.4	1.6	0.0	
Queue Length 95th (m)	14.5	56.3	44.8	2.2	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	718	2905	2501	324	202	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.34	0.51	0.30	0.02	0.41	
Intersection Summary						

0.85 24 0 0 20 20 1900 101.5 101.5 0.72 6.6 5.0 2501 0.22 625 625 625 625 6.6 0.95 1.00 1.00 1.00 3451 1.00 3451 0.85 735 % ₩ 758 117.2 117.2 0.84 6.6 5.0 2905 c0.43 1482 % A V 117.2 0.84 6.0 3.5 564 0.03 0.03 0.43 1.00 0.6 205 205 1900 6.0 1.00 1.00 1.00 1.00 0.95 1686 0.33 583 583 pm+pt 241 Lane Configurations
Traffic Volume (vph)
Reture Volume (vph)
Reture Volume (vph)
Total Lost time (s)
Lane Util. Factor
Frob. ped/bikes
Frob. p Permitted Phases
Aduated Green, G (s)
Effective Green, g (s)
Aduated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)
Lane Gpp Cap (vph)
Ws Ratio Prot
Ws Ratio Prot Heavy Vehicles (%)
Turn Type
Protected Phases

%6

%0 Prot

10.4 0.07 5.8 3.0 193

10.4 10.7 5.8 3.0 3.0 0.00

0.11 0.11 60.5 1.00 0.3 60.7

0.04 60.2 1.00 0.1 60.3 E

0.30 6.8 1.00 7.1 A

0.51 3.2 1.00 0.6 3.9 A A A A A A A

Progression Factor Incremental Delay, d2

Jniform Delay, d1

v/c Ratio

5.8 1.00 1.00 1.00 1.00 0.95 1.805 0.95 0.95 0.85 6

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P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Synchro 11 Report Page 16

18.4 C

Sum of lost time (s) ICU Level of Service

10.7 0.50 140.0 69.2%

HCM 2000 Level of Service

Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio

Approach Delay (s) Approach LOS

Delay (s) Level of Service

ntersection Capacity Utilization Actuated Cycle Length (s)

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis
7: Kerr Street & Prince Charles Drive

5 5 0 40 5 555 5 40 410 5 5 5 5 6 0 40 5 5 5 5 5 40 410 5 5 5 5 5 40 410 5 5 5 5 5 40 410 5 5 5 5 5 40 410 5 5 5 5 5 40 410 5 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 410 5 5 5 5 40 418 6 6 6 6 1 6 48 418 6 6 6 6 1 11 1 1 4 1 1 1 4 1 1 1 4 1 1 1 4 1	
Stop	00
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.99 0.99	Stop 0%
30 31 31 1.1 3.1 None 0.90 0.90 0.87 0.83 238 0.87 1299 1311 694 509 697 7.1 6.5 6.3 4.3 97 100 89 94 194 23 23 97 100 89 94 194 24 82 6 822 822 0.06 14 16 A 1.6 A 1.6 A 1.6 B	
3.6 1.1 3.1 1.1 3.1 1.1 3.1 1.1 3.1 1.29 0.090 0.090 0.087 0.083 238 0.087 1299 1311 6.94 5.09 946 959 571 3.09 575 7.1 6.5 6.3 3.4 3.4 3.9 99 99 94 194 2.3 97 100 89 99 94 194 14 14 16 A 1.6 A 1.6 A 1.6 A 1.6 A 1.6 A 1.6 B 1.1 A 1.6 A 1.6 B 1.1 A 1.6 A 1.6 B 1.1	12
3 None 0.90 0.90 0.87 0.83 238 0.87 1299 1311 6.94 5.09 697 7.1 6.5 6.3 4.3 4.2 4.2 4.2 4.2 4.2 3.4 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4.2 4	3.6
None 0.90 0.90 0.87 1299 1311 694 595 7.1 6.5 6.3 4.3 97 100 89 94 194 200 427 965 822 882 0.06 14 16 A 1.6 A 1.6 B CU Level of Service B	<u>-</u>
None 238 0.90 0.90 0.90 0.87 0.83 0.87 1299 1311 6.94 5.99 571 3.09 575 7.1 6.5 6.3 4.2 3.5 4.0 3.4 2.3 94 194 2.3 94 194 2.3 95 194 2.3 94 194 2.3 95 194 2.3 94 194 195 194 194 194 194 194 195 194 194 195 194 195 194 195 195 195 195 195 195 195 195 195 195	
238 0.90 0.90 0.87 1299 1311 694 996 996 977 1 6.5 6.3 4.3 3.5 7.1 6.5 6.3 4.3 3.5 7.1 6.5 6.3 4.3 2.3 3.5 4.0 3.4 2.3 3.5 4.0 3.4 2.3 3.5 4.0 3.4 2.3 3.5 4.0 3.4 3.4 2.3 3.5 4.0 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4 3.4	
0.90 0.90 0.87 0.83 0.87 1299 1311 694 509 697 697 946 959 571 309 675 7.1 6.5 6.3 4.3 4.2 4.2 3 97 100 89 99 99 94 194 209 427 965 822 822 822 822 822 822 822 822 822 82	
1299 1311 694 509 946 959 571 309 7.1 6.5 6.3 4.3 3.5 4.0 3.4 2.3 97 100 89 99 194 209 427 965 SB1 542 6 6 1.4 1.6 A 1.6 A 1.6 ICU Level of Service B	0.90
946 959 571 309 7.1 6.5 6.3 4.3 3.5 4.0 3.4 2.3 97 100 89 99 194 209 427 965 SB1 542 6 822 0.06 1.4 1.6 1.6 ICU Level of Service B	
946 959 571 309 7.1 6.5 6.3 4.3 3.5 4.0 3.4 2.3 97 100 89 99 194 209 427 965 SB1 6.822 0.06 1.4 1.6 1.6 ICU Level of Service B	
7.1 6.5 6.3 4.3 3.5 4.0 3.4 2.3 97 100 89 99 194 209 427 965 SB1 642 622 0.06 1.4 1.6 A 1.6 ICU Level of Service B	926 306
3.5 4.0 3.4 2.3 97 100 89 99 194 209 427 965 8 SB 1 542 6 6 822 0.06 1.4 1.6 A 1.6 A 1.6	
97 100 89 99 194 209 427 965 88 194 209 427 965 82 6 6 6 6 6 14 4 16 A 1.6 A 1	4.0 3.6
194 209 427 965 SB 1 542 48 6 822 0.06 1.4 1.6 A 1.6 I.CU Level of Service B	
SB1 542 48 6 822 0.06 1.4 1.6 A 1.6 ICU Level of Service	
542 48 6 822 0.06 1.4 1.4 1.6 A 1.6	WB1 NB1
6 822 0.06 1.4 1.6 A 1.6 I.6	.9
822 0.06 1.4 1.6 A 1.6 ICU Level of Service	9 78
0.06 1.4 1.6 A 1.6 ICU Level of Service	
1.4 1.6 1.6 ICU Level of Service	
1.6 A 1.6 ICU Level of Service	3.8 0.
A 1.6 ICU Level of Service	
1.6 ICU Level of Service	
ICU Level of Service	16.2 C
ICU Level of Service	
ICU Level of Service	1.6
	28.7%

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

																																								ď	
*	SBR		30	30			0.85	35																																ICU Level of Service	
→	SBT	Ŷ,	380	380	Free	%0	0.85	447						None		262																								J Level o	
←	NBT	÷	535	535	Free	%0	0.85	629	2	3.6	1.	0		None		103																								0	
•	NBL		2	S)			0.85	9									0.90	502			393	4.1		2.2	66	184	SB 1	482	0	32	1700	0.28	0.0	0.0		0.0			9.0	43.7%	15
-	EBR		10	10			0.85	12									0.90	490			379	6.2		3.3	86	292	NB 1	635	9	0	1041	0.01	0.1	0.2	∢	0.2				4	
4	EBL	>	-82	20	Stop	%0	0.85	24	20	3.6	7:	2					0.00	1126			832	6.4		3.5	92	298	EB 1	36	24	15	357	0.10	2.5	16.2	ပ	16.2	ပ			tion	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	₽ (s)	b0 dueue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	HSS	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Timings
9: Kerr Street & Stewart Street
Ultimate)

Lane Group EBI. EBI. WBI. NBI. NBI. SBI. Lane Configurations 4 4 4 4 4 4 Traffic Volume (vph) 35 20 35 5 430 40 310 Future Volume (vph) 35 25 20 35 5 4 310 Future Volume (vph) 35 25 20 35 5 4 310 Traffic Volume (vph) 35 25 20 35 5 4 310 Permitted Phases 4 8 2 2 6 6 Detector Phase 4 8 2 2 6 6 Detector Phase 4 8 2 2 6 6 Detector Phase 4 8 2 2 6 6 Minimum Britis (s) 300 300 300 300 300 300 300 300 300 300		1	†	-	Ļ	•	←	•	→	
40 40 40 40 40 40 40 40 40 40 40 40 40 4	Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
430 40 A M Pm+pt 2 40 24.0 52.1 24.0 6.0 35.0 10.0 35.0 10.0 2.1 0.0 0.0 5.4 Lead Yes Yes Yes Yes Yes Yes Yes Yes A Comin None 110.0 110.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 35.3 35.0 33.0 36.0 36.0 36.0 37.0 37.0 37.0 38.0 38.0 37.0 38.0 39.0	Lane Configurations		€‡		4		€‡		4	
430 40 NA pm+pt 2 6 6 2 1 2 1 2 35.0 10.0 35.0 10.0 35.0 10.0 6.0 0.0	Traffic Volume (vph)	32	52	20	32	2	430	40	310	
NA pm+pt 2 1 1 6 6 6 7 1 3 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Future Volume (vph)	32	22	20	32	2	430	40	310	
2 1 24.0 6.0 24.0 6.0 32.0 10.0 35.0 10.0 35.0 10.0 46.7% 13.3% 29.6 7.0 29.6 7.0 29.6 7.0 29.6 7.0 3.3 3.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 3.5 3.5 3.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 14.0 0.0 3.5 3.5 3.5 3.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Turn Type	Perm	Ν Α	Perm	ΑN	Perm	Ν	pm+pt	ΑA	
24.0 6.0 35.0 10.0 35.0 10.0 35.0 10.0 35.0 10.0 2.1 0.0 0.0 0.0	Protected Phases		4		∞		2	~	9	
24.0 6.0 32.0 10.0 32.0 10.0 32.0 10.0 6.0 29.6 7.0 29.6 7.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Permitted Phases	4		∞		2		9		
24.0 6.0 32.0 10.0 35.0 10.0 35.0 10.0 3.3 3.0 2.1 0.0 5.4 Lead Yes Yes 4.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 3.0 35	Detector Phase	4	4	∞	∞	2	2	-	9	
24.0 6.0 35.0 10.0 35.0 10.0 46.7% 13.3% 29.6 7.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 3.0 35	Switch Phase									
320 100 350 100 46.7% 13.3% 29.6 70 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 0.0 35	Minimum Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
35.0 10.0 46.7% 13.3% 2.1 0.0 2.1 0.0 0.0 5.4 Lead Yes Yes Yes 4.0 3.0 0.0 0.0 0.0 0.0 14.0 14.0 35	Minimum Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
46.7% 13.3% 29.6 7.0 29.6 7.0 2.1 0.0 5.4 Lag Yes Yes Yes Yes Yes O.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
296 7.0 2.1 0.0 2.1 0.0 0.0 0.0 4.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 3.3 3.5 3.5 3.6 3.6 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Total Split (%)	40.0%	40.0%	40.0%	40.0%	46.7%	46.7%	13.3%	%0.09	
3.3 3.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Maximum Green (s)	24.6	24.6	24.6	24.6	29.6	29.6	7.0	39.6	
2.1 0.0 0.0 0.0 5.4 Lead Ves Yes Yes Yes O.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.3	
5.4 Lead Yes Yes Yes 4.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	
5.4 Leg Lead Yes Yes Yes 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 35	Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Lag Lead Yes Yes 4.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 14.0 114.0 35	Total Lost Time (s)		5.4		5.4		5.4		5.4	
Yes Yes Yes 30 30 30 00 00 00 00 00 00 00 00 00 00	Lead/Lag					Lag	Lag	Lead		
4.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lead-Lag Optimize?					Yes	Yes	Yes		
3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
0.0 0.0 C-Min None C-Min None C-Min 35		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
C-Min None C 10.0 14.0 35	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10.0 14.0 36	Recall Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
14.0 35 35	Walk Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
32	Flash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
Intersection Summary Cycle Length: 75 Actuated Cycle Length: 75 Offset 13 (17%), Referenced to phase 2.NBTL and 6:SBTL, Start of Green Natural Cycle: 75	Pedestrian Calls (#/hr)	20	20	20	20	32	32		32	
Cycle Length: 75 Actuated Cycle Length: 75 Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Intersection Summary									
Actuated Cycle Length: 75 Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Cycle Length: 75									
Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green charges (2) (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green charges (2) (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Actuated Cyde Length: 75									
Natural Cycle, 75	Offset 13 (17%), Reference	d to phase	2:NBTL	and 6:SB7	L, Start	of Green				
	Natural Cycle: 75									

Splits and Phases: 9: Kerr Street & Stewart Street

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Queues 9: Kerr Street & Stewart Street

Future Total AM (Ultimate) Upper Kerr Village (8124-01) Lane Group EBT WBT NBT SBT

Lane Group Flow (vph) 79 152 554 464

vic Ratio

Control Delay 23.8 14.2 9.8 9.5

Queue Langth 50th (m) 96 8.7 25.9

Queue Langth 50th (m) 96 8.7 25.9

Internal Link Dist (m) 71.6 36.6 141.0 79.0

Significant Cap Reductn 0 0 0 0

Significant Cap Reductn 0 0 0 0

Reduced vic Ratio 0.17 0.27 0.48 0.45

P.181124101/OPA Processi3. Analysis101 - SynchrolFTAM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

Movement EBI EBT EBR WBI WBI WBI NBI NBI NBI NBI NBI SBI	lovement					WRT	M/DD	2			į		
National Part National Par		EBL	EBT	EBR	WBL		VON	NBL	NBT	NBR	SBL	SBT	SBR
1,	ane Configurations		4			4			4			4	
1900 1900	affic Volume (vph)	32	25	2	20	32	02	2	430	20	40	310	30
1900 1900	uture Volume (vph)	32	22	2	20	32	2	2	430	20	40	310	30
1.00	leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	otal Lost time (s)		5.4			5.4			5.4			5.4	
1,00 0.97 1,00 0.99 1,00 1,00 0.99 1,00	ane Util. Factor		1.00			1.00			1.00			1.00	
100 0.99 1.00 1	rpb, ped/bikes		0.0			0.97			1.00			0.99	
10 10 10 10 10 10 10 10	lpb, ped/bikes		0.99			1.00			1.00			1.00	
10			0.99			0.92			0.99			66.0	
1701 1612 1775 1729	It Protected		0.97			0.99			1.00			0.99	
1368 1532 1634 1600 1691 1681	atd. Flow (prot)		1701			1612			1775			1729	
HF 0.62 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.8	It Permitted		0.79			0.94			1.00			0.91	
He	atd. Flow (perm)		1388			1532			1769			1581	
(4) 378 49 378 (vph) 0 5 0 6 24 43 85 6 524 24 49 378 (vph) 0 5 0 0 0 1 0 4 41 4 4 441 6 4 4 441 441 6 4 441 441 6 6 6 6 0	eak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
yeth) 0 5 0 68 0 64 0 34 yeth) 0 74 0 84 0 653 35 <td>dj. Flow (vph)</td> <td>43</td> <td>ၕ</td> <td>9</td> <td>24</td> <td>43</td> <td>82</td> <td>9</td> <td>524</td> <td>24</td> <td>49</td> <td>378</td> <td>37</td>	dj. Flow (vph)	43	ၕ	9	24	43	82	9	524	24	49	378	37
(vph) 0 74 0 0 84 0 553 0 0 461 20 20 20 30 553 5 35 35 35 n) 2% 20 30 6% 0% 2% 0% 2% 6% n) 2% 4% 28% 6% 0% 2% 6% 6% n) 2% 0 0 0 0 0 4 4 n 4 8 2 0 0 0 0 4 1 4 8 2 4 0 0 4 0 1 4 8 2 4 0 0 4 0 1 5 4 6 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TOR Reduction (vph)	0	2	0	0	89	0	0	-	0	0	က	0
1	ane Group Flow (vph)	0	74	0	0	¥	0	0	223	0	0	461	0
National Part National Par	onfl. Peds. (#/hr)	20		20	20		20	8		35	35		30
National Perm NA Perm	eavy Vehicles (%)	5%	%/	16%	%0	2%	4%	28%	%9	%	5%	%9	%9
Perm NA Perm	us Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	4	0
(s) 4 4 8 8 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	urn Type	Perm	Ν		Perm	Ν		Perm	Ν		pm+pt	¥	
(s) 4 8 8 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	rotected Phases		4			∞			2		-	9	
15.2 15.2 49.0 49.0 15.2 15.2 49.0 49.0 15.2 15.2 49.0 49.0 15.2 15.2 49.0 49.0 15.4 5.4 5.4 6.5 15.5 10.5 0.65 10.6 0.05 0.07 0.48 10.6 0.27 0.48 10.7 0.06 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.27 0.48 10.8 0.48 10.8 0.45	ermitted Phases	4			∞			2			9		
15.2 15.2 49.0 4 0.20 0.20 0.65 0.65 5.4 5.4 5.4 5.4 4.0 4.0 4.0 0.05 0.26 0.27 0.48 0.26 0.27 0.48 0.26 0.27 0.48 0.27 0.59 0.59 0.0 0.6 0.27 0.48 0.27 0.6 0.27 0.27 0.6 0.48 0.27 0.25 0.25 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.27 0.48 0.28 0.48 0.29 0.25 0.48 0.48 0.48 0.40 0.48 0.40 0.45 0.40 0.	ctuated Green, G (s)		15.2			15.2			49.0			49.0	
0.20 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.6	fective Green, g (s)		15.2			15.2			49.0			49.0	
5.4 5.4 5.4 5.4 5.4 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	ctuated g/C Ratio		0.20			0.20			0.65			0.65	
4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	learance Time (s)		5.4			5.4			5.4			5.4	
261 310 1155 11 0.05	ehicle Extension (s)		4.0			4.0			4.0			4.0	
0.05	ane Grp Cap (vph) s Ratio Prot		281			310			1155			1032	
25.2 25.2 6.6 6.7 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	s Ratio Perm		0.05			c0.05			c0.31			0.29	
25.2 25.2 6.6 1.00 1.00 1.00 1.00 1.01 0.6 25.9 25.9 8.0 25.9 25.0 25.9 25.0	c Ratio		0.26			0.27			0.48			0.45	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	niform Delay, d1		25.2			25.2			9.9			6.4	
25.9 25.9 8.0 C C A A 25.9 25.9 8.0 C C A A 25.9 25.9 8.0 C C A A A A A A A A A A A A A A A A A A	rogression Factor		1.00			1.00			1.00			1.00	
25.9 25.9 8.0 C C A A C C C A A Activity ratio 0.45 Tation 67.6% ICU Level of Service C T Service C T Service C T A A A A A A A A A A A A A A A A A A A	cremental Delay, d2		0.7			9.0			4.1			0.3	
25.9	elay (s)		25.9			25.9			8.0			6.7	
25.9 25.9 8.0 6 C C A A In the HCM 2000 Level of Service B actify ratio 75.0 Sum of lost time (s) 13.8 followed of Service C B 13.8 followed of Service C C A 13.8 followed of Service C C A 14.8	evel of Service		ပ			ပ			٧			٧	
C C A A 10.8 HCM 2000 Level of Service B B racity ratio 0.45 Sum of lost time (s) 13.8 ration 67.6% ICU Level of Service C 15	pproach Delay (s)		25.9			25.9			8.0			6.7	
10.8 HCM 2000 Level of Service 0.45 Sum of lost time (s) ration 67.6% IOU Level of Service 15	pproach LOS		ပ			ပ			∢			¥	
10.8 HCM 2000 Level of Service 0.45 Sum of lost time (s) zation 67.6% ICU Level of Service 15	tersection Summary												
acity ratio 0.45 Sum of lost time (s) 75.0 Sum of lost time (s) cation 67.6% ICU Level of Service 15 15	CM 2000 Control Delay			10.8	욷	M 2000 L	evel of S	service		ш			
75.0 Sum of lost time (s) cation 67.6% ICU Level of Service 15	CM 2000 Volume to Capacit	y ratio		0.45									
Utilization 67.6% ICU Level of Service 15	ctuated Cyde Length (s)			75.0	Su	m of lost i	ime (s)			13.8			
	itersection Capacity Utilizatio	<u>_</u>		%9'.29	ಠ	J Level of	Service			O			
	nalysis Period (min)			15									

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Timings 10: Dorval Road & Wyecroft Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

→ → →	BT SBL SBT	•	410 160 1025	, 160	NA Prot NA	2 1 6		2 1 6			41.0 12.0 41.0	17.0	14.2% 3	12.0	4.0 3.0 4.0	2.0	0.0 0.0 0.0	2.0	_	Yes	5.0 5.0 5.0	3.0	0.0	0.0	None C-		27.0 27.0	0 0					
·	NBL NB1	*	110 14	110 14	pm+pt N	2	2	2			12.0 41		14.2% 35.0%								5.0		0.0		None C-Min	7	27					Green	
ţ	WBT	₩	130	130	NA P	00		∞		10.0	25.0				4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				3T, Start of	
>	WBL	r	20	20	pm+pt	က	∞	က		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SE	
1	EBT	₩	120	120	Ϋ́	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				e 2:NBTL	
1	EBL	*	215	215	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None						120	enced to phas	Condinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green Natural Code: 00	Control Type: Actuated-Coordinated

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Queues 10: Dorval Road & Wyecroft Road

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

29.2 0.0 29.2 0.0 29.2 104.6 #149.3 672.1

SBL 174 0.46 53.5 0.0 0.0 53.5 53.5 30.3

1598 0.72 19.8 0.0 19.8 100.3 m150.6 494.4

120 0.54 26.3 0.0 26.3 8.11 m13.6

WBT 413 0.69 26.8 0.0 26.8 20.8 35.5 199.3

22 22 0.08 27.6 0.0 27.6 3.6 8.9

239 0.29 20.9 0.0 20.9 11.8 24.2 155.6

234 0.60 0.00 0.0 0.0 56.6 56.6 27.0 40.0

Lane Group Flow (vph)

2163

65.0 239 0 0 0 0

390

145.0 367

Control Delay
Queue Delay
Total Delay
Queue Length 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (m)
Base Capacity (m)
Starvation Cap Reducth
Spillback Cap Reducth
Storage Cap Reducth
Reduced vic Ratio

0.74

0.45

0.40

0.25 939

115.0 416 0 0 0 0 0

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

Queue shown is maximum after two cycles.

The control of the percentile queue is metered by upstream signal.

60	
/ Analysi	
Capacity	ft Road
M Signalized Intersection Capacity Analysis	Wyecroft Ro
nalized In	10: Dorval Road & Wyecrof
HCM Sig	10: Dorva

Future Total AM (Ultimate) Upper Kerr Village (8124-01)

440 440 1900

•	S		0 10			_						~	2 0	,	~ !				0	_	9		~ I	α Ι.				_	<u>~</u>			+ -			O	~								
→	SS	4₩₽	1025	1900	7.0	0.91	1.00	1.00	9	1.00	1.00	4672	0.92	111	25	1540	i	80		¥.	J		51.2	51.2	0.43	7.0	2.0	1993	00.33	į	0.77	29.4	3.0	32.4		34.3	O							
۶	SBL	F	160	1900	2.0	0.97	1.00	1.00	9:	0.95	0.95	3433	0.92	174	0	174	è	0,7	0	Prot	-		13.3	13.3	0.11	2.0	2.0	380	0.05		0.46	20.0	200	51.8	۵									
•	NBR		9 09	1900									0.92	92	0	0	Š	<u>e</u> c	0																				ပ		24.0	2		
←	NBT	444	1410	1900	7.0	0.91	1.00	1.00	0.99	1.00	1.00	5036	0.92	1533	က	1595	ò	0,7	2	≨ '	2		49.5	49.5	0.41	7.0	2.0	2077	0.32		0.77	30.3	13	20.6	ပ	20.9	O							
•	NBL	<u></u>	110	1900	2.0	1.00	1.00	1.00	1.00	0.95	0.08	140	0.92	120	0	120	7007	e c	0	pm+pt	2	7	61.1	61.1	0.51	2.0	2.0	216	c0.05	0.23	0.56	20.0 1 18	2.4	26.0	ပ				Service					
4	WBR		250	1900									0.92	272	0	0	5 5	0,7	0																				HCM 2000 Level of Service		Sum of lost time (s)			
ţ	WBT	₹	130	1900	7.0	0.95	0.99	1.00	0.90	1.00	1.00	3125	0.92	141	199	214	č	0 0 0	0	≨ '	∞		18.3	18.3	0.15	7.0	2.0	476	c0.02		0.45	46.3	1.4	47.7	□	47.3	۵		SM 2000		Sum of lost time (s)	ח רבאפו כ		
-	WBL	<u></u>	2 2	1900	2.0	1.00	1.00	1.00	1.00	0.95	09.0	1039	0.92	22	0	22	m ,	% O	0	bm+pt	က	∞ ,	22.2	22.2	0.18	2.0	2.0	211	0.00	0.02	0.10	40.4	0.5	40.9	□				Ĭ		ಪ ⊆	2		
*	EBR		9 9	1900									0.92	109	0	0	ო გ	0 0 0	O																				31.5	99.0	120.0	15.9%	2	
†	EBT	₹	120	1900	7.0	0.95	0.99	1.00	0.93	1.00	1.00	3079	0.92	130	82	157	ě	e c	7	Ϋ́	4		29.3	29.3	0.24	7.0	2.0	751	0.05		0.21	30.1	0.3	36.4	□	44.9	۵							
1	EBL	ř.	215	1900	2.0	0.97	1:00	1:00	1:00	0.95	0.95	3127	0.92	234	0	234	706	0,7	0	Prot I	_		14.9	14.9	0.12	2.0	2.0	88	c0.02		0.60	49.8	3.9	53.6	Ω					y ratio	5	=		
	Movement	Lane Configurations	Traffic Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Ŧ	Fit Protected	Satu. Flow (prot) Fit Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	But Blogger (%)	Bus Blockages (#/hr)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Analysis Period (min)	C Criticall and Group	כ כוווכמו במום כו כבד

0.92 0 0 0 1 7%

P:\81\24\01\OPA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

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P:\81\24\01\OPA Process\3. Analysis\01 - Synchro\FTAM.syn BA Group - EFS

Future Total PM (Ultimate) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

	4	>	€	←	→	*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	-	¥.	r	‡	₩ ₽		
Traffic Volume (veh/h)	25	155	130	089	260	110	
Future Volume (Veh/h)	52	155	130	089	260	110	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly flow rate (vph)	27	167	140	731	602	118	
Pedestrians	2						
Lane Width (m)	3.6						
Walking Speed (m/s)	[
Percent Blockage	0						
Right tum flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
vC, conflicting volume	1312	365	725				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1312	365	725				
tC, single (s)	8.9	7.0	4.2				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.3				
p0 queue free %	62	73	8				
cM capacity (veh/h)	127	623	844				
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
Volume Total	27	167	140	366	366	401	319
Volume Left	27	0	140	0	0	0	0
Volume Right	0	167	0	0	0	0	118
cSH	127	623	844	1700	1700	1700	1700
Volume to Capacity	0.21	0.27	0.17	0.21	0.21	0.24	0.19
Queue Length 95th (m)	2.8	8.2	4.5	0.0	0.0	0.0	0.0
Control Delay (s)	40.9	12.9	10.1	0.0	0.0	0.0	0.0
Lane LOS	ш	മ	ш				
Approach Delay (s)	16.8		9.1			0.0	
Approach LOS	ပ						
Intersection Summary							
Aroman Dalam	l	l	30	l	l	l	
Average Delay		Ì	30 6%	Ξ	ICTLI eyel of Service	Convice	٧
Analysis Doriod (min)			0.0.0 1 1	2	0	201710	•
Alialysis rende (min)			2				

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Synchro 11 Report Page 1

Timings 2: Kerr Street & Shepherd Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*	Ŷ.	*	£\$	*	‡	*	*	*	*	
Traffic Volume (vph)	42	10	95	15	45	220	105	155	465	09	
Future Volume (vph)	42	10	92	15	45	220	105	155	465	09	
Turn Type	Perm	Ϋ́	Perm	Ϋ́	Perm	₹	Perm	pm+pt	ΑN	Perm	
Protected Phases		4		∞		2		Ψ-	9		
Permitted Phases	4		∞		2		2	9		9	
Detector Phase	4	4	∞	∞	2	2	2	_	9	9	
Switch Phase											
Minimum Initial (s)	2.0	5.0	2.0	2.0	18.0	18.0	18.0	7.0	18.0	18.0	
Minimum Split (s)	22.0	22.0	22.0	22.0	28.2	28.2	28.2	11.0	28.2	28.2	
Total Split (s)	33.0	33.0	33.0	33.0	53.0	53.0	53.0	22.0	75.0	75.0	
Total Split (%)	30.6%	30.6%	30.6%	30.6%	49.1%	49.1%	49.1%	20.4%	69.4%	69.4%	
Maximum Green (s)	29.0	29.0	29.0	29.0	47.8	47.8	47.8	18.0	8.69	8.69	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.3	4.0	3.3	3.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.9	1.9	1.9	0.0	1.9	1.9	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.0	4.0	5.2	5.2	5.2	4.0	5.2	5.2	
Lead/Lag					Lag	Lag	Lag	Lead			
Lead-Lag Optimize?					Yes	Yes	Yes	Yes			
Vehide Extension (s)	3.0	3.0	3.0	3.0	3.5	3.5	3.5	2.5	3.5	3.5	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	Min	Min	Min	None	Ξ	Min	
Walk Time (s)	7.0	7.0	7.0	7.0	10.0	10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	13.0	13.0	13.0		13.0	13.0	
Pedestrian Calls (#/hr)	0	0	0	0	2	2	2		2	2	
Intersection Summary											
Cycle Length: 108											
Actuated Cycle Length: 49.1											
Natural Cycle: 65											
L											

Splits and Phases: 2: Kerr Street & Shepherd Road



P\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Queues
2: Kerr Street & Shepherd Road
Upper Kerr Village (812401)

	1	†	>	ţ	•	←	4	٠	→	*	
Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	49	33	88	165	49	588	108	160	479	65	
v/c Ratio	0.22	0.10	0.40	0.39	0.14	0.43	0.16	0.27	0.21	90.0	
Control Delay	19.9	11.2	23.1	8.1	12.1	12.7	3.7	5.0	4.6	1.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	19.9	11.2	23.1	8.1	12.1	12.7	3.7	2.0	4.6	1.6	
Queue Length 50th (m)	3.5	0.8	7.2	[2.5	18.0	0.0	4.1	7.4	0.0	
Queue Length 95th (m)	11.6	6.4	19.9	13.7	9.1	34.5	7.4	11.2	15.5	3.2	
Internal Link Dist (m)		110.5		241.3		143.2			21.4		
Turn Bay Length (m)					20.0		20.0	20.0		20.0	
Base Capacity (vph)	723	1008	789	1011	851	3385	1471	84	3574	1583	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.07	0.03	0.12	0.16	90:0	0.17	0.07	0.19	0.13	0.04	
Intersection Summary											

P.\81\2401\0PA Process\\ \text{3. Analysis\\ \text{01} - Synchro\FTPM.syn}

BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

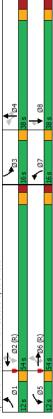
EBL EBT BBR WBL WBT WBR NBL NBT 45 45 570 45 570 1900 1900 1900 1900 1900 1900 1900 19		1	†	<u> </u>	-	Ļ	4	•	←	•	۶	→	*
45 10 20 95 15 145 45 570 45 10 20 95 15 145 45 570 40 1900 1900 1900 1900 1900 1900 1900 19	Movement	BE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
45 10 20 95 15 145 45 570 45 10 20 95 15 145 45 570 1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	*	2		r	2		r	ŧ	*	*	‡	*
10 20 95 15 145 45 570 100 1900 1900 1900 1900 1900 1900 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.99 1.00 1.00 1.00 0.90 1.00 0.99 1.00 1.00 0.90 1.00 0.99 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.90 1.00 0.95 1.00 1.00 0.90 1.00 0.95 1.00 1.01 1.02 1.02 1.00 1.00 1.02 0.92 0.97 0.92 0.97 1.03 0.92 0.97 0.92 0.97 1.04 1.05 0.98 44 0 49 588 1.00 0.0 0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 0 1.00 0.0 0 1.00 0 0 1.00 0	Traffic Volume (vph)	45	19	20	92	15	145	45	220	105	155	465	.00
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	45	10	20	92	15	145	42	220	105	155	465	8
1.00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	Total Lost time (s)	4.0	4.0		4.0	4.0		5.2	5.2	5.2	4.0	5.2	5.2
1.00 1.00 0.99 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	1:00	1.00		1.00	1.00		1.00	0.95	1.00	1.00	0.95	8.5
1,00	Frpb, ped/bikes	9:1	1:00		00.1	0.99		1.00	1.00	0.97	1.00	9:1	8 :
100 0.90 1.00 0.86 1.00 1.00 0.96 1.00 1.00 0.96 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Flpb, ped/bikes	1:00	1.00		0.99	1.00		1.00	1.00	1.00	1.00	1:00	9:
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.00 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0.05 0.00 0	き	1.00	0.90		1.00	98.0		1.00	1.00	0.85	9.	9.	0.85
1770 1676	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1:00	-0.
1214 100 0.74 100 0.48 100 0.92 0.92 0.92 0.93 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.92 0.97 0.98 16 149 49 568 0.97 0.92 0.92 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Satd. Flow (prot)	1770	1676		1732	1601		1770	3539	1543	1804	3574	1583
1214 107	Catd Flow (norm)	1214	1676		12/1	1604		0.40	2530	1543	4.0 828	3574	1582
49 11 22 98 16 149 49 588 49 15 0 98 44 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Deak-hour factor DHE	000	000	000	200	000	700	000	700	700	0 07	700	0 0
2% 2% 2% 3% 2% 1% 1% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adi. Flow (vph)	49	17	22	86	16	149	49	288	108	160	479	65
49 15 0 98 44 0 49 588 2% 2% 2% 2% 1% 5 1% 5 0 0 0 0 0 0 0 5 0 0 0 0 0 0 0 5 4 4 4 0 0 0 0 5 92 9.2 1% 0 0 0 0 5 92 9.2 9.2 9.2 19.0 19.0 19.0 9.2 9.2 9.2 19.0 19.0 19.0 19.0 0.19 0.19 0.19 0.19 0.19 0.39 0.19 0.39 0.19 0.39 0.17 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.02 0.01	RTOR Reduction (vph)	0	18	0	0	121	0	0	0	99	0	0	24
2% 2% 3% 2% 15 5 1% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 1% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 3% 2% 3% </td <td>Lane Group Flow (vph)</td> <td>49</td> <td>15</td> <td>0</td> <td>86</td> <td>44</td> <td>0</td> <td>49</td> <td>288</td> <td>42</td> <td>160</td> <td>479</td> <td>4</td>	Lane Group Flow (vph)	49	15	0	86	44	0	49	288	42	160	479	4
2% 2% 2% 1% 2% 1% 0 </td <td>Confl. Peds. (#/hr)</td> <td></td> <td></td> <td></td> <td>15</td> <td></td> <td>2</td> <td></td> <td></td> <td>2</td> <td>2</td> <td></td> <td></td>	Confl. Peds. (#/hr)				15		2			2	2		
Perm NA Perm N	Heavy Vehicles (%)	5%	5%	5%	3%	5%	1%	2%	1%	2%	%0	1%	5%
Perm NA NA Perm NA NA NA Perm NA NA<	Bus Blockages (#/hr)	0	0	0	0	0	0	0	5	0	0	0	O
4 4 8 8 2 2 9.2 9.2 9.2 9.2 19.0 19.0 0.19.0 0.19 0.19 0.19 0.19 0.	Turn Type	Perm	NA		Perm	¥		Perm	A	Perm	pm+pt	NA	Perm
4 8 8 2 92 9.2 9.2 19.0 19.0 92 9.2 9.2 9.2 19.0 19.0 4.0 9.1 0.19 0.19 0.19 0.39 0.39 0.39 4.0 4.0 4.0 4.0 4.0 5.2 5.2 5.2 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.5	Protected Phases		4			∞			2		_	9	
92 92 92 190 190 190 190 192 92 92 92 190 190 190 192 92 92 92 190 190 190 192 92 92 92 190 190 190 190 190 190 190 190 190 190	Permitted Phases	4			∞			2		2	9		9
92 92 92 92 92 92 190 190 0.19 0.19 0.19 0.19 0.19 0.39 0.39 4.0 4.0 4.0 4.0 4.0 5.2 5.2 2.7 314 251 300 345 1372 0.04 0.07 0.03 0.15 0.14 0.43 16.8 16.3 17.4 16.6 9.7 11.0 1.00 1.00 1.00 1.00 0.2 0.3 17.3 16.4 18.4 16.8 9.9 11.3 B B B B A B B B B B B A B B A B B B B B B	Actuated Green, G (s)	9.2	9.5		9.5	9.5		19.0	19.0	19.0	30.6	30.6	30.6
0.19 0.19 0.19 0.19 0.39 0.39 0.39 0.39 0.39 0.39 0.39 0.3	Effective Green, g (s)	9.5	9.5		9.5	9.5		19.0	19.0	19.0	30.6	30.6	30.6
4.0 4.0 4.0 4.0 5.2 5.2 3.0 3.0 3.0 3.0 3.6 227 314 251 300 345 1372 3 0.01 0.02 0.03 0.15 0.017 0.02 0.05 0.39 0.15 0.14 0.43 0 0.5 0.10 0.10 0.10 0.10 1.00 1.00 1.00 1	Actuated g/C Ratio	0.19	0.19		0.19	0.19		0.39	0.39	0.39	0.62	0.62	0.62
3.0 3.0 3.0 3.0 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	Clearance Time (s)	4.0	4.0		4.0	4.0		5.2	5.2	5.2	4.0	5.2	5.2
227 314 251 300 345 1372 1004 0.001 0.003 0.007 0.005 0.007 0.005 0.007 0.005 0.007 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.00 1.00 1	Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.5	3.5	3.5	7.5	3.5	3.5
0.04 0.01 0.03 0.017 0.05 0.017 0.02 0.02 0.05 0.039 0.15 0.14 0.43 0.15 0.14 0.43 0.15 0.14 0.43 0.15 0.14 0.43 0.15 0.14 0.43 0.15 0.14 0.10 0.10 0.10 0.10 0.10 0.10 0.10	Lane Grp Cap (vph)	227	314		251	300		345	1372	298	229	2231	988
0.04	v/s Ratio Prot		0.01			0.03		į	00.17		90.04	0.13	
16.8 0.00 0.33 0.13 0.14 0.14 0.14 0.15 0.14 0.15 0.14 0.15 0.15 0.15 0.15 0.15 0.15 0.15 0.15	v/s Ratio Perm	0.04	100		c0.07	0.4		0.05	c P C	0.03	0.13	5	0.03
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	16.8	16.3		17.4	16.6		4 6	110	9.0	4.1	4.0	3.5
17.3 16.4 18.4 16.8 9.9 11.3 16.9 16.9 B B B B B B B B B B B B B B B B B B B	Progression Factor	1:00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
17.3 16.4 18.4 16.8 9.9 11.3 B B B A B B 16.9 17.4 10.9 B B B A 10.9 B B B B B A 10.9 17.4 10.9 B B B B B B A 10.9 17.4 0.9	Incremental Delay, d2	0.5	0.1		1.0	0.2		0.2	0.3	0.1	0.2	0.1	0:0
16.9 B B B A B B B B B B B B B B B B B B B	Delay (s)	17.3	16.4		18.4	16.8		6.6	11.3	9.5	4.3	4.0	3.6
16.9 17.4 10.9 B B B B B B A B B B Control of Service 10.39 Ago Sum of lost time (s) 15 ICU Level of Service 15 ICU Level	Level of Service	ω	ш		ш	ш		A	ω	∢	⋖	⋖	4
B B B B B B B C C C C C C C C C C C C C	Approach Delay (s)		16.9			17.4			10.9			4.1	
9.5 HCM 2000 Level of Service 0.39 0.39 Sum of lost time (s) 2.30 cation 60.5% ICU Level of Service 15	Approach LOS		ш			ш			В			∢	
9.5 HCM 2000 Level of Service 0.39 0.39 Sum of lost time (s) 22tion 60.5% IOU Level of Service 15	Intersection Summary												
Ago Sum of lost time (s) 49. Sum of lost time (s) 20. CUL Level of Service 15. CUL Level of Service	HCM 2000 Control Delay			9.5	H	SM 2000	Level of S	service		∀			
49.0 Sum of lost time (s) cation 60.5% IOU Level of Service 15	HCIM 2000 Volume to Capac	acity ratio		0.39	ľ								
Utilization 60.5%	Actuated Cycle Length (s)			49.0	ഗ്ഗ	m of lost	time (s)			13.2			
	Intersection Capacity Utiliza	ation		90.2%	5	U Level o	T Service			α			
	Analysis Period (min)			15									
c Critical Lane Group	c Critical Lane Group												

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Future Total PM (Ultimate) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

Lame Group EBL EBT EBR WBL WBT NBT NBT NBT NBT SBL				٠									
Fig. 145 190 235 290 275 510 145 190 235 290 275 510 145 190 235 290 275 510 145 190 235 290 275 510 145 190 235 290 275 510 140 140 140 140 145 190 130 140 140 140 140 140 140 140 140 140 14	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
510 145 190 235 290 275 510 145 190 235 290 275 510 145 190 235 290 275 7 4 4 3 8 2 4 4 3 8 2 7 7 4 4 3 8 25.0 7.0 10.0 10.0 7.0 10.0 30.9 10.0 38.0 38.0 16.0 38.0 45.0% 13.3% 31.7% 31.7% 13.3% 31.7% 31 33 33 33 30 33.0 5.9 13.0 3.0 3.0 0.0 5.9 13.0 5.3 1.0 5.3 5.9 13.0 13.0 10.0 5.9 13.0 13.0 10.0 5.9 13.0 13.0 10.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 13.0 13.0 13.0 5.9 14.0 14.0 14.0 5.0 14.0 14.0 14.0 14.0 5.0 14.0 14.0 14.0 14.0 5.0 14.0 14.0 14.0 14.0 14.0 5.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14	Lane Configurations	je-	44	*	F	44	*	je-	+	*	1	+	*
510 145 190 235 290 275 Perm Physic NA Perm Prod NA PR 2 7 4 4 3 8 8 25.0 7.0 10.0 10.0 7.0 10.0 34.3 38.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 <	Traffic Volume (vph)	65	585	130	300	915	510	145	190	235	290	275	20
Perm pmm-pt NA Perm Prof NA P 2 7 4 4 3 8 2 7 4 4 3 8 25.0 7.0 10.0 10.0 34.3 34.3 10.0 30.9 10.0 34.3 34.3 10.0 34.3	Future Volume (vph)	92	585	130	300	915	510	145	190	235	290	275	20
25 4 4 4 3 8 8 2 4 4 3 8 8 2 5 7 7 4 4 3 8 8 2 5 7 7 10.0 10.0 7.0 10.0 30.0 30.0 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 30.0 34.3 34.3 34.3 34.3 3	Turn Type	pm+pt	Ν	Perm	pm+pt	ΑA	Perm	pm+pt	ΑN	Perm	Prot	₹	Perm
25.0 7.0 10.0 10.0 7.0 10.0 30.9 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 34.3 10.0 34.3 34.3 34.3 34.3 34.3 34.3 34.3 3	Protected Phases	Ψ-	9		2	2		7	4		က	∞	
250 77 4 4 3 8 8 250 77 100 10.0 7.0 10.0 30.9 10.0 34.3 34.3 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.3 54.5 10.0 34.5 10.0	Permitted Phases	9		9	2		2	4		4			00
250 7.0 10.0 10.0 7.0 10.0 3.9 10.0 34.3 34.3 10.0 34.3 54.0 54.0 10.0 34.3 34.3 10.0 34.3 54.0 10.0 38.0 10.0 38.0 10.0 38.0 10.0 38.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 1	Detector Phase	τ-	9	9	2	2	2	7	4	4	က	∞	00
250 70 10.0 10.0 7.0 10.0 30.9 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 10.0 34.3 34.3 34.3 10.0 34.3 34.3 34.3 34.3 34.3 34.3 34.3 3	Switch Phase												
30.9 10.0 34.3 34.3 10.0 34.3 34.5 10.0 34.3 34.5 10.0 34.3 34.5 10.0 34.3 34.5 10.0 34.3 34.5 10.0 34.3 34.5 10.0 34.3 34.5 10.0 34.5 1	Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
540 160 380 380 160 380 4650% 13.3% 31.7%	Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
45.0% 13.3% 31.7% 31.7% 31.7% 31.4% 31.2% 31.7% 31.2 31.7 31.7 13.0 31.7 31.7 31.7 13.0 31.7 31.7 31.7 31.0 31.7 31.7 31.7 31.0 31.7 31.7 31.7 31.7 31.7 31.7 31.7 31.7	Total Split (s)	12.0	54.0	54.0	12.0	54.0	54.0	16.0	38.0	38.0	16.0	38.0	38.0
48.1 13.0 31.7 13.0 31.7 13.0 31.7 13.0 31.7 33.2 2.2 0.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Total Split (%)	10.0%	45.0%	45.0%	10.0%	42.0%	45.0%	13.3%	31.7%	31.7%	13.3%	31.7%	31.7%
37 30 33 33 33 33 32 32 32 22 00 30 30 00 00 00 00 00 00 00 00 00 00	Maximum Green (s)	9.0	48.1	48.1	9.0	48.1	48.1	13.0	31.7	31.7	13.0	31.7	31.7
22 0.0 3.0 3.0 0.0 3.0 0.0 5.9 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
5.9 3.0 6.3 6.3 3.0 6.3 149 Lag Lag Lag Lag Lag Lag Lag Lag Lag S.5 2.5 4.0 4.0 2.5 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lag Lead Lag Lead Lag Yes Yes Yes Yes Yes S 2.5 4.0 4.0 2.5 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Yes Yes Yes Yes Yes Yes S. 2.5 4.0 4.0 2.5 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	-ead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
5.5 2.5 4.0 4.0 2.5 4.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30 30 30 30 30 30 30 00 00 00 00 00 00 0	Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C-Min None None None None None 7:0 7:0 7:0 7:0 7:0 7:0 14:0 14:0 14:0 14:0 14:0 14:0 14:0 14	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.0 7.0 7.0 7.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0 14	Recall Mode	None	Q-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
14.0 14.0 14.0 14.0 14.0 15 35 35 35 35 35 35 35 35 35 35 35 35 35	Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
5	Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Intersection Summary Sycle Length: 120 Activated Cyde, Length: 120 Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Alatural Cycle; 90	Pedestrian Calls (#/hr)		12	15		12	15		32	32		32	35
Cycle Length: 120 Actuated Cycle Length: 120 Offiset 40 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90	Intersection Summary												
Actuated Cyde Length: 120 Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90	Cycle Length: 120												
Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90	Actuated Cycle Length: 120												
Natural Cycle: 90	Offset 49 (41%), Referenced	to phase	2:WBTL	and 6:EB	TL, Start	of Green							
	Natural Cycle: 90												

Splits and Phases: 3: Kerr Street & Speers Road



P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Queues 3: Kerr Street & Speers Road

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	4	†	<i>></i>	>	ţ	4	•	←	4	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	89	616	137	316	963	537	153	200	247	302	289	53
v/c Ratio	0.21	0.40	0.18	0.65	0.54	0.53	0.52	0.56	0.52	0.82	0.75	0.14
Control Delay	11.5	25.2	10.2	22.6	23.8	4.0	32.7	48.9	9.5	70.4	57.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<u>Ö</u>
Total Delay	11.5	25.2	10.2	22.6	23.8	4.0	32.7	48.9	9.5	70.4	57.2	3.7
Queue Length 50th (m)	8.4	55.3	8.8	35.1	82.3	0.0	25.1	42.6	1.3	36.7	64.5	0.0
Queue Length 95th (m)	19.0	92.3	20.3	#70.7	119.7	21.7	36.7	8.09	21.1	9.75#	87.8	4.6
Internal Link Dist (m)		138.4			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	8	1557	292	483	1781	1014	317	495	269	381	201	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	_
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	Ī
Reduced v/c Ratio	0.00	0.40	0 18	0.65	0.54	0.53	0.48	0.40	0.43	080	0 50	0 12

Intersection Summary

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

Queue shown is maximum after two cycles.

P.(81)24(01)OPA Process\3. Analysis\01 - Synctro\FTPM.syn BA Group - EFS

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HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

II _	œ	N.	20	20	0	က၊	0	က	0	S)	0	-	0	ı ← I	2	53	2	-	35	%	0	۱E		œ	m	က	0	က	0	ကျ		- p	4 .	4 6) -	- LC						ı					
*	SBI	-	S	2	1900	6.3	1.00	0.9	1.00	0.85	1.00	1501	1.00	1501	0.95	2	4	_	က	%0		Perm			24.3	24.	0.20	6.3	4.0	303		0.0	0.04	4.88.4	0.0	38.5	3										
-	SBT	*	275	275	1900	6.3	1.00	1.00	1.00	1.00	1.00	1900	1.00	1900	0.95	588	0	588		%	0	¥	∞		24.3	24.3	0.20	6.3	4.0	384	c0.15	1	0.75	42.0	0.0	0.0	2	27.0	<u>.</u>	ш							
۶	SBL	K.	290	290	1900	3.0	0.97	1.00	1.00	1.00	0.95	3467	0.95	3467	0.95	302	0	302	35	%	0	Prot	က		12.9	12.9	0.11	3.0	2.5	372	60.00	0	0.82	52.4	00.7	6.2 65.3	Э ц	ı									
•	NBR	¥.	235	235	1900	6.3	1.00	0.93	1.00	0.85	1.00	1486	1.00	1486	0.95	247	194	23	35	1%	0	Perm		4	22.9	22.9	0.19	6.3	4.0	283		0.04	0.19	40.7	0.0	4.0.4		2				O		18.2			
—	NBT	*	190	96	1900	6.3	1.00	1:00	1.00	1.00	1.00	1877	1.00	1877	0.95	200	0	200		%0	က	Ν	4		22.9	22.9	0.19	6.3	4.0	358	0.11	C	0.56	0.44	3.0	6.2 6.3	2	41.5	2 -	ב							
•	NBL	*	145	145	1900	3.0	1:00	1:00	0.99	1:00	0.95	1772	0.31	584	0.95	153	0	153	32	1%	0	pm+pt	7	4	34.4	34.4	0.29	3.0	2.5	281	0.05	0.10	0.54 5.54	0.45	9	35.7	3	2				Service			a)		
4	WBR	*	510	510	1900	5.9	1.00	0.94	1:00	0.85	1.00	1485	1.00	1485	0.95	537	269	268	9	2%	0	Perm		2	29.8	59.8	0.50	5.9	5.5	740		0.18	0.36	18.4	3.	4: 0t	2 0	2				HCM 2000 Level of Service		st time (s)	ICU Level of Service		
ţ	WBT	*	915	915	1900	5.9	0.95	1.00	1.00	1.00	1.00	3539	1.00	3539	0.95	963	0	963		5%	0	NA	2		29.8	59.8	0.50	5.9	5.5	1763	0.27		0.55	70.7	3.5	2000		20.6	3	כ		1CM 2000		Sum of lost time (s)	CU Level		
•	WBL	*	300	300	1900	3.0	1.00	1.00	1.00	1.00	0.95	1750	0.33	609	0.95	316	0	316	5	3%	0	pm+pt	5	2	0.69	0.69	0.58	3.0	2.5	471	c0.07	c0.31	0.67	14.7	0.0	17.6	2 0	מ				_		0,	_		
<i>></i>	EBR	*-	130	130	1900	5.9	1:00	0.97	1:00	0.85	1:00	1560	1:00	1560	0.95	137	9/	61	2	%0	0	Perm		9	53.2	53.2	0.4	5.9	5.5	691		0.0 40.0	0.09	2.3	20.7	40 F	2)				31.4	0.73	120.0	78.9%	15	
†	EBT	*	585	585	1900	5.9	0.95	1.00	1.00	1.00	1.00	3511	1.00	3511	0.95	616	0	616		2%	4	NA	9		53.2	53.2	0.44	5.9	5.5	1556	0.18	9	0.40	7.00	3.5	23.0	3	27.3	5 0)							
4	EBL	r	92	92	1900	3.0	1.00	1.00	1.00	1.00	0.95	1802	0.24	446	0.95	89	0	89	9	%0	0	pm+pt	τ-	9	59.4	59.4	0.49	3.0	2.5	290	0.01	0.10	0.23	10.5	0.0	13.7	2	2					ity ratio		ion		
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Ft	Fit Protected	Satd. Flow (prot)	Flt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. Flow (vph)	RTOR Reduction (vph)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	Heavy Vehicles (%)	Bus Blockages (#/hr)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Vehicle Extension (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Katio Perm	v/c Kato	Uniform Delay, d'I	Progression radio	Indemental Delay, uz	l evel of Septice	Annroach Delay (s)	Approach I OS	Applicacii ECO	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analysis Period (min)	c Critical Lane Group

P.18112410110PA Process13. Analysis101 - SynchrolFTPM.syn BA Group - EFS

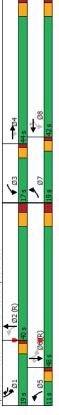
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Timings
4: Dorval Road & Speers Road
Ultimate)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	ř.	‡	¥C	*	‡	*	je.	₩	*	*	¥C.	
Traffic Volume (vph)	415	535	20	180	710	202	65	635	295	710	375	
Future Volume (vph)	415	535	20	180	710	202	65	635	295	710	375	
Turn Type	Prot	ΑN	Perm	pm+pt	₹	vo+mq	pm+pt	₹	pm+pt	AN	Perm	
Protected Phases	7	4		က	∞	~	2	2	-	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	_	2	2	-	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	19.0	44.0	44.0	17.0	45.0	19.0	11.0		19.0	48.0	48.0	
Total Split (%)	15.8%	36.7%	36.7%	14.2%	35.0%	15.8%	9.5%	က်	15.8%	40.0%	40.0%	
Maximum Green (s)	15.0	37.0	37.0	13.0	35.0	15.0	7.0		15.0	41.0	41.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1.0		1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0:0		0.0	0.0	0:0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB	TL, Start	of Green							
Natural Cycle: 115												

Splits and Phases: 4: Dorval Road & Speers Road

Control Type: Actuated-Coordinated



P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Ultimate) Upper Ken Village (8124-01)

	•	†	>	-	ţ	4	•	+	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	451	582	12	196	772	549	71	777	321	772	408
v/c Ratio	0.97	0.53	60:0	0.52	0.79	0.74	0.25	0.83	0.97	0.59	0.50
Control Delay	87.3	36.4	0.3	36.1	59.3	27.1	21.4	49.4	77.5	16.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	87.3	36.4	0.3	36.1	59.3	27.1	21.4	49.4	77.5	16.8	2.7
Queue Length 50th (m)	~59.7	59.5	0.0	30.5	79.5	42.1	9.2	88.4	~57.3	61.4	4.5
Queue Length 95th (m)	#91.8	77.1	0.0	63.4	118.4	107.4	17.7	111.6	#122.9	34.0	4.2
Internal Link Dist (m)		412.3			472.1			621.6		494.4	
Turn Bay Length (m)	0.09		0.09	85.0		22.0	0.07		110.0		
Base Capacity (vph)	464	1107	584	394	1034	738	279	974	331	1310	810
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.53	0.09	0.50	0.75	0.74	0.25	0.80	0.97	0.59	0.50
Information Cummons											

intersection outlines.

— Volume exceeds capacity, queue is theoretically infinite.

— Volume shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

P.181124010PA Processi3. Analysisi01 - SynchrolFTPM.syn BA Group - EFS

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Control Cont		1	†	<u>/</u>	-	Ļ	4	€	←	•	۶	→	•
100 100	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
415 535 50 180 710 605 65 635 80 295 710 40 1900	Lane Configurations	K	ŧ	¥c.	r	*	¥C.	r	₩		r	*	¥.
415 535 50 180 710 505 65 635 80 295 710 420 70 100 1900 1900 1900 1900 1900 1900 1	Traffic Volume (vph)	415	535	20	180	710	505	65	635	80	295	710	375
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	415	535	20	180	710	202	65	635	80	295	710	375
4.0 7.0 7.0 4.0 7.0 4.0 4.0 7.0 4.0 7.0 4.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100	Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
1.00	Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
100 100 100 100 100 100 100 100 100 100	Frpb, ped/bikes	1:00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00
1.00 1.00 0.85 1.00 1.00 0.85 1.00 0.98 1.00 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0	Flpb, ped/bikes	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
0.95 1.00 0.95 1	き	1:00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
3433 3560 1556 1786 3546 1581 1895 3514 1787 3574 1892 3433 3560 1556 6 1786 1364 1361 232 100 0.13 1.00 0.32 100 1.00 0.100 1.00 1.00 1.00 1.00 1.0	Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
10,000 1,000 0,0	Satd. Flow (prot)	3433	3560	1556	1786	3546	1581	1805	3514		1787	3574	1599
3433 3560 1556 671 3546 1581 599 3514 240 3574 702 032 032 032 032 032 032 032 032 032 0	Flt Permitted	0.95	1.00	1.00	0.36	1.00	1.00	0.32	1.00		0.13	1.00	1.00
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	3433	3560	1556	671	3546	1581	299	3514		240	3574	1599
451 582 54 196 772 549 71 690 87 321 772 461 582 17 196 772 566 71 769 0 20 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
10	Adj. Flow (vph)	421	582	24	196	772	549	71	069	87	321	772	408
451 582 17 196 772 506 71 769 0 321 772 2	RTOR Reduction (vph)	0	0	37	0	0	43	0	∞	0	0	0	227
2% 1% 2% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Lane Group Flow (vph)	421	582	17	196	772	206	71	69/	0	321	772	181
2% 1% 2% 1%<	Confl. Peds. (#/hr)	S		2	വ		2						
Prof. NA Perm pm+pt NA pm+ov pm+pt NA Pm+ov pm+pt NA pm+ov pm+pt NA pm-pt NA pm	Heavy Vehicles (%)	5%	1%	5%	1%	1%	1%	%0	4%	1%	1%	1%	1%
Prof. NA Perm pm+pt NA pm+pt NA pm+pt NA Pm Prof. NA Prof. NA Pm+pt NA Pm+pt NA Pm+pt NA Pm Pm Pm Pm Pm Pm Pm P	Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
162 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2 16.2 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2 16.2 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2 16.2 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2 43.0 13.0 13.0 13.0 13.0 13.0 13.0 13.0 1	Turn Type	Prot	AA	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	AA	Perm
16.2 37.2 4.6 8 8 2 6 6 16.2 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2 16.2 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2 16.3 37.2 37.2 45.0 33.0 50.4 0.26 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 3.0 5.0 5.0 3.0 5.0 3.0 5.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 5.0 3.0 5.0 3.0 3.0 3.0 5.1 34.2 38.3 5.0 5.0 5.0 5.1 34.2 38.3 5.0 5.0 5.1 34.2 38.3 5.0 5.0 5.1 34.2 38.3 5.0 5.2 4.3 5.0 5.0 5.0 6.3 5.0 5.0 5.0 7.0 1.0 1.0 1.6 1.3 1.0 7.0 1.0 1.0 1.5 5.0 5.2 7.0 7.0 7.0 7.0 8.6 35.0 28.9 43.9 57.8 33.1 31.4 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 8.6 35.0 28.9 43.9 57.8 33.1 7.0 7.0 7.0 8.6 35.0 28.9 43.9 57.8 8.7 8.7 8.3 3.1 3.4 9.0 7.0 7.0	Protected Phases	7	4		က	∞	_	2	2		_	9	
162 37.2 37.2 45.0 33.0 50.1 37.3 31.7 52.8 43.2	Permitted Phases			4	∞		∞	2			9		9
16.2 37.2 37.2 45.0 36.0 37.3 31.7 52.8 43.2 4.0 3.1 0.31 0.38 0.28 0.42 0.31 0.26 0.44 0.36 4.0 7.0 7.0 4.0 7.0 4.0 4.0 7.0 4.0 1.03 42.2 33.3 5.0 3.0 5.0 3.0 5.0 4.03 1.03 42.2 33.3 97.5 660 24.2 92.8 32.6 1286 5.01 0.16 0.05 0.02 0.01 0.02 0.02 5.1.7 34.2 28.9 26.5 40.3 30.0 29.7 41.6 33.1 31.4 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 5.1.7 34.2 28.9 26.5 40.3 30.0 29.7 41.6 33.1 31.4 1.00 1.00 1.00 1.00 1.31 0.33 1.00 1.00 5.01 7.0 2.0 2.0 2.0 2.0 6.02 8.6 3.0 3.0 2.0 41.6 3.0 6.03 43.9 5.8 3.1 30.4 50.0 7.0 7.0 7.0 7.0 7.0 8.6 3.6 2.8 43.9 5.8 3.1 30.4 50.0 8.6 3.6 2.8 43.9 47.1 48.4 29.1 8.6 3.8 1.00 1.00 1.00 1.00 7.0 7.0 2.0 2.0 2.0 8.6 3.6 2.0 2.0 2.0 2.0 8.7 8.4 3.0 3.0 3.0 2.2 9.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Actuated Green, G (s)	16.2	37.2	37.2	42.0	33.0	20.1	37.3	31.7		52.8	43.2	43.2
0.13 0.31 0.31 0.38 0.28 0.42 0.31 0.26 0.04 0.38 0.38 0.28 0.42 0.31 0.26 0.04 0.38 0.30 0.30 0.30 0.30 0.30 0.30 0.30	Effective Green, g (s)	16.2	37.2	37.2	42.0	33.0	50.1	37.3	31.7		52.8	43.2	43.2
4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 4.0 7.0 4.0 5.0 5.0 3.0 5.0 5.0 5.0 3.0 5.0 5.0 5.0 3.0 5.0 5.0 5.0 3.0 5.0 5.0 5.0 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Ratio	0.13	0.31	0.31	0.38	0.28	0.42	0.31	0.26		0.44	0.36	0.36
10	Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
483 1103 482 363 975 660 242 928 326 1286 0.013 0.16 0.05 0.02 0.11 0.02 0.029 0.97 0.53 0.03 0.54 0.79 0.77 0.29 0.83 0.98 0.60 0.517 34.2 28.9 26.5 40.3 30.0 29.7 416 33.1 314 3.4 0.00 0.100 1.00 1.00 1.00 1.00 1.00 1	Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Co.13 0.16 0.05 c.022 0.11 0.01 0.22 co.14 0.02 co.13 0.16 0.03 c.02 0.01 0.08 0.03 c.02 0.01 0.08 0.03 0.04 0.02 0.03 0.04 0.70 0.29 0.03 0.04 0.70 0.29 0.08 0.08 0.08 0.08 0.09 0.00 1.00 1.00 1.00 1.00 1.00 1.00	Lane Grp Cap (vph)	463	1103	482	363	975	099	242	928		326	1286	575
0.97 0.53 0.03 0.54 0.79 0.77 0.29 0.83 0.05 0.60 0.54 0.79 0.77 0.29 0.83 0.09 0.60 0.60 0.54 0.79 0.77 0.29 0.83 0.09 0.60 0.60 0.54 0.79 0.77 0.29 0.83 0.09 0.60 0.60 0.54 0.79 0.77 0.29 0.83 0.60 0.60 0.60 0.60 0.60 0.60 0.60 0.6	v/s Ratio Prot	c0.13	0.16		0.05	c0.22	0.11	0.01	0.22		00.14	0.22	
0.97 0.53 0.03 0.54 0.79 0.77 0.29 0.83 0.98 0.60 0.60 0.61 0.61 0.62 0.79 0.77 0.29 0.83 0.98 0.60 0.60 0.61 0.62 0.79 0.70 0.70 0.70 0.70 0.70 0.70 0.70	v/s Ratio Perm			0.01	0.15		0.21	0.08			00.29		0.11
517 34.2 28.9 26.5 40.3 30.0 29.7 416 33.1 31.4 1.00 1.00 1.00 1.00 1.60 1.31 0.39 1.00 1.00 1.47 0.48 34.9 0.9 0.1 1.5 5.0 5.2 0.7 8.4 39.9 1.6 86.6 35.0 28.9 43.9 57.8 33.1 30.4 50.0 88.5 16.7 F D C D E C C D F B 56.1 47.1 48.4 29.1 16 D P F B repactly ratio 0.94 HCM 2000 Level of Service D repactly ratio 0.94 Sum of lost time (s) 22.0 15.0 Sum of lost time (s) 22.0 15.0 Sum of lost time (s) 22.0 16.1 Service D 17.0 Sum of lost time (s) 22.0 18.1 Service D 18.2 Sum of lost time (s) 22.0 19.3 Sum of lost time (s) 22.0 19.4 Sum of lost time (s) 22.0 19.5 Sum of lost time (s) 22.0 19.5 Sum of lost time (s) 22.0 19.6 Sum of lost time (s) 22.0 19.7 Sum of lost time (s) 22.0 19.8 Sum of lost time (s) 22.0 19.8 Sum of lost time (s) 22.0 10.8 Sum of lost time (s) 22.0 10.8 Sum of lost time (s) 22.0 10.8 Sum of lost time (s) 22.0 11.8 Sum of lost time (s) 22.0 12.0 Sum of lost time (s) 22.0 13.0 Sum of lost time (s) 22.0 14.1 Sum of lost time (s) 22.0 15.0 Sum of lost time (s) 22.0 16.0 Sum of lost time (s) 22.0 17.0 Sum of lost time (s) 22.0 18.0 Sum of lost time (s) 22.0 19.0 Sum of lost time (s) 22.0 10.0 Sum of lost time (s) 23.0 10.0 Sum of lost time (s) 2	v/c Ratio	0.97	0.53	0.03	0.54	0.79	0.77	0.29	0.83		0.98	09.0	0.32
1.00 1.00 1.00 1.60 1.31 0.93 1.00 1.00 1.47 0.48 34.9 1.00 0.9 0.1 1.5 5.0 5.2 0.7 8.4 39.9 1.6 86.6 35.0 28.9 4.9 57.8 33.1 30.4 50.0 88.5 1.6 F D C D E C C D F B 56.1 47.1 48.4 29.1 E 56.1 47.1 48.4 29.1 C D A A A S 50.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	21.7	34.2	28.9	26.5	40.3	30.0	29.7	41.6		33.1	31.4	27.7
34.9 0.9 0.1 1.5 5.0 5.2 0.7 8.4 39.9 1.6 86. 5.0 28.9 43.9 5.78 33.1 30.4 50.0 88.5 16.7 8.4 50.1 8.5 16.7 8.4 5.0 1.6 16.7 8.6 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Progression Factor	1:00	1.00	1.00	1.60	1.31	0.93	1.00	1.00		1.47	0.48	0.18
86.6 35.0 28.9 43.9 57.8 33.1 30.4 50.0 88.5 16.7 F D C D E C C D F B 56.1 47.1 48.4 29.1 9.1 43.9 HCM 2000 Level of Service D 49 apacity ratio 0.94 LCM 2000 Level of Service E (s) 120.0 Sum of lost time (s) 22.0 113.1 CU Level of Service E 15.1 CU Level of Service E	Incremental Delay, d2	34.9	0.9	0.1	1.5	2.0	5.2	0.7	8.4		39.9	1.6	_
F D C D E C C D F 29 86.1 47.1 48.4 29 E D D D C D E C C D F 29 90.4 43.9 HCM 2000 Level of Service D C 200 Sum of lost time (s) 22.0 slifzation 87.7% I/O Level of Service E 15.0 Sum of lost time (s) 15.0 Sum of lost time (Delay (s)	9.98	35.0	28.9	43.9	57.8	33.1	30.4	20.0		88.5	16.7	6.1
56.1 47.1 48.4 29. E D D 29. y 43.9 HCM 2000 Level of Service D ispacity ratio 0.94 Sum of lost time (s) 22.0 (s) 120.0 Sum of lost time (s) E ilization 87.7% ICU Level of Service E 15 15 ICU Level of Service E	Level of Service	ഥ	Ω	O	۵	ш	ပ	O	Ω		ш	ш	⋖
y 43.9 HCM 2000 Level of Service D apacity ratio 0.94 CM ost time (s) 22.0 tilization 87.7% ICU Level of Service E 15	Approach Delay (s)		56.1			47.1			48.4			29.1	
y 43.9 HCM 2000 Level of Service apacity ratio 0.94 (s) 120.0 Sum of lost time (s) tilization 87.7% ICU Level of Service 15	Approach LOS		ш			۵			Ω			ပ	
y 43.9 HCM 2000 Level of Service apacity ratio 0.94 Common of the common	Intersection Summary												
yapacity ratio 0.94	HCM 2000 Control Delay			43.9	Ī	OM 2000	Pvel of	Service					
(s) 120.0 Sum of lost time (s) Ilization 87.7% ICU Level of Service	HCM 2000 Volume to Capac	ity ratio		0.94			5	2)			
tilization 87.7% 15	Actuated Cycle Length (s)			120.0	Ō	nm of los	t time (s)			22.0			
	Intersection Capacity Utilizat	ion		87.7%	2	:U Level	of Service	•		ш			
c Critical Lane Group	Analysis Period (min)			15									
	 Critical Lane Group 												

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Future Total PM (Ultimate) Upper Kerr Village (8124-01) Timings 5: St. Augustine Drive & Speers Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

Queues 5: St. Augustine Drive & Speers Road

Lane Group EBL EBT WBT NBR SBL SBT Lane Configurations FBL EBL BT WBT NBR SBL SBT Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 25 15 0 Future Volume (vph) 125 760 1070 27 07 07 07 07 07 07 07 07 07 07 07 07 07								
tions		1	†	ţ	•	۶	→	
(yph) 125 760 1070 25 15 15 (yph) 125 760 1070 25 15 15 15 760 1070 25 15 15 15 760 1070 25 15 15 15 760 1070 25 15 15 15 15 16 15 15 15 15 15 15 15 15 15 15 15 15 15	Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
(yph) 125 760 1070 25 15 15 (vph) 125 760 1070 25 15 16 16 17 760 1070 25 15 16 17 7	Lane Configurations	_	4₽	4₽	¥C	F	42	
(vph) 125 760 1070 25 15 es es 4 8 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Traffic Volume (vph)	125	200	1070	22	15	0	
es 4 8 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Future Volume (vph)	125	200	1070	22	15	0	
es 4 8 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Turn Type	Perm	Ϋ́	ΑN	Perm	Perm	Ϋ́	
(s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Protected Phases		4	00			9	
(s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Permitted Phases	4			2	9		
(s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 (s) (s) 23.9 23.9 23.9 24.3 24.3 24.3 24.3 24.3 24.3 24.3 24.3	Detector Phase	4	4	∞	2	9	9	
(s) 5.0 5.0 5.0 5.0 5.0 5.0 (s) (s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Switch Phase							
(s) 23.9 23.9 23.9 24.3 24.3 24.3 24.3 37.0 53.0 53.0 53.0 57.0 27.0 27.0 27.0 27.0 27.0 27.0 27.0 2	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	2.0	
10	Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
n (s) 87.1 5% 77.5% 77.5% 22.5% 22.5% n (s) 87.1 87.1 87.1 20.7 20.7 30.9 31.9 31.9 31.9 31.9 31.9 31.9 31.9 31	Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0	
	Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%	
	Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
	Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
z `	All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
	Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
	Lead/Lag							
	Lead-Lag Optimize?							
z	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
2	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0:0	0.0	
	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
	Recall Mode	C-Min	C-Min	C-Min	None	None	None	
	Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#hr) 0 0 0 Intersection Summary 0 0 0 Cycle Length: 120 4 0 0 Actuated Cycle Length: 120 0 0 0 Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 60 0 Control Type: Actuated-Coordinated 0 0 0	Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Intersection Summary Cycle Length: 120 Actuated Cycle Length: 120 Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated	Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Cycle Length: 120 Actuared Cycle Length: 120 Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated	Intersection Summary							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 60 Control Type: Actualed-Coordinated	Cycle Length: 120							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 60 Control Type: Actuated-Coordinated	Actuated Cyde Length: 120							
Natural Cycler 60 Control Type: Actuated-Coordinated	Offset 27 (23%), Reference	ed to phase	4:EBTL	and 8:WB	T, Start o	f Green		
Control Type: Actuated-Coordinated	Natural Cycle: 60							
	Control Type: Actuated-Coc	ordinated						

Splits and Phases: 5: St. Augustine Drive & Speers Road



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395 0 0 0 0 0.25

2995

2992

Control Delay
Queue Delay
Total Delay
Queue Enright 50th (m)
Queue Length 95th (m)
Internal Link Dist (m)
Turn Bay Length (m)
Base Capacity (np)
Sanvation Cap Reduch
Spillback Cap Reduch
Sorage Cap Reduch
Sorage Cap Reduch

50.0 379 0 0 0 0 0.34

Intersection Summary

M. Volume for 95th percentile queue is metered by upstream signal.

SBT 99 99 0.45 9.3 0.0 0.0 0.0 6.6 6.6 93.6

SBL 16 0.16 57.1 0.0 57.1 3.7

26 0.08 0.0 0.0 0.0 0.0

1151 0.38 6.7 0.0 6.7 91.9 137.3

B18 818 0.27 1.5 0.0 1.5 13.2 m10.0

130 0.34 4.0 0.0 4.0 4.2 m4.2

Lane Group Lane Group Flow (vph) v/c Ratio

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HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

EBL EBT RBL WBT WBR NBI NBI WBT WBR NBI NBI RB SBI		125 125 125 900	EBT ♣	EBR	WBL	WBT	WBR	NB	MRT	NBR	S.	SBT	SBR
125 140		125 125 900	4₽					אַהַר	ומאן		ל נו		
125 760 25 0 1070 35 0 0 25 15 0 0 100 100 100 1900 1900 1900 1900		125 125 900				₩.				¥C	y -	£	
125		125	260	52	0	1070	32	0	0	25	15	0	92
1900 1900 1900 1900 1900 1900 1900 1900		006	260	52	0	1070	32	0	0	25	15	0	92
5.9 5.9 5.9 6.3 <td></td> <td></td> <td>1900</td>			1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,000 0.995 0.995 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0		5.9	5.9			5.9				6.3	6.3	6.3	
1,00		00.1	0.95			0.95				1.00	1.00	1.00	
100 100		00.	1.00			1.00				1.00	1.00	1.00	
1,00		8.	0.1			1.00				1.00	1.00	1.00	
1900 3550 10		00.1	1.00			1.00				0.86	1.00	0.85	
1800 3550 1644 1805 1615 1600 1000		3.95	1.00			1.00				1.00	0.95	1.00	
100 0.24 0.09 0.095 0.096		800	3550			3555				1644	1805	1615	
Heat	_).24	1.00			1.00				1.00	0.95	1.00	
F 0.36 0.9		450	3550			3555				1644	1805	1615	
130 792 26 0 1115 36 0 0 26 16 0 93 130 817 0 0 1 15 0 0 0 25 0 93 130 817 0 0 0 115 0 0 0 25 0 93 130 817 0 0 0 115 0 0 0 1 5 0 93 130 817 0 0 0 115 0 0 0 0 1 1 1		96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	0.96
hh) 10 1 1 0 1 1 0 0 0 1 1 0 0 0 25 0 93 hg 1		130	792	56	0	1115	36	0	0	56	16	0	66
bh) 130 817 0 0 1150 0 0 1 1 16 6 6 6 6 6 6 6 6 6 6 6 6 6 6		0	_	0	0	_	0	0	0	25	0	93	0
5 5 5 5 6 0%		130	817	0	0	1150	0	0	0	_	16	9	0
Perm NA NA Perm Perm NA NA NA Perm Perm NA NA NA Perm NA NA NA NA Perm NA NA NA NA NA Perm NA		2 2	70	20 /4	ر م	40/	20	ò	ò	ò	ò	ò	00
NA		%0	%	4%	%n	%	%n	%n	% O	%n	%n	%	%n
101.1 101.		em	A 4			¥ ∞				Perm	Perm	¥ °	
s) 101.1 102.2 10	Permitted Phases	4								2	9		
101.1 101.1 101.1 101.1 6.7 6.7 6.7 0.84 0.84 0.84 0.84 0.06 0.06 0.84 0.84 0.84 0.84 0.06 0.06 0.84 0.84 0.84 0.06 0.06 0.80 2.99 2.996 91 100 0.29 0.23 0.03 0.01 0.34 0.27 0.38 0.02 0.16 0.34 0.70 2.81 0.00 0.01 0.34 0.70 2.81 0.01 0.10 0.34 0.70 2.81 0.01 0.10 0.34 0.70 2.81 0.00 0.10 0.34 0.70 0.34 0.3 0.1 0.35 0.30 0.37 0.30 0.37 0.30 0.30 0.30 0.37 0.30 0.30 0.30 0.38 0.30 0.30 0.30 0.30 0.38 0.30 0.30 0.30 0.30 0.38 0.30 0.30 0.30 0.30 0.38 0.30 0.30 0.30 0.30 0.30 0.38 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30 0.30			101.1			101.1				6.7	6.7	6.7	
0.84 0.84 0.84 0.06 0.06 0.06 0.06 0.09 0.09 0.09 0.09			101.1			101.1				6.7	6.7	6.7	
5.9 5.9 5.9 5.9 6.3 6.7 7.4 7.8 6.7 7.4 7.8 6.7 7.4 7.8 6.7 <td></td> <td>.84</td> <td>0.84</td> <td></td> <td></td> <td>0.84</td> <td></td> <td></td> <td></td> <td>90.0</td> <td>90.0</td> <td>90:0</td> <td></td>		.84	0.84			0.84				90.0	90.0	90:0	
3.0 3.0		5.9	5.9			5.9				6.3	6.3	6.3	
379 2990 2995 91 100 0.23 -0.32 -0.03 0.00 -0.01 0.34 0.27 0.38 0.02 0.01 2.1 1.9 2.2 53.5 54.0 2.1 1.9 2.81 1.00 1.00 2 1.8 0.2 0.3 0.1 0.8 3.7 1.5 6.5 53.6 54.7 A A A A A A D D D Pelay 7.5 HCM 2000 Level of Service A<		3.0	3.0			3.0				3.0	3.0	3.0	
0.23 c0.32 0.00 c0.01 0.34 0.27 0.38 0.02 0.16 0.34 0.27 0.38 0.02 0.16 2.1 1.9 2.2 83.5 84.0 1.8 0.2 0.3 0.3 0.1 0.0 2 1.8 0.2 0.3 0.3 0.1 0.0 3 A A A A A A A A A A A A A A A A A A A		379	2990			2995				91	100	06	
0.29 0.29 0.24 0.27 0.24 0.27 0.38 0.00 0.00 0.16 0.24 0.70 0.28 0.38 0.02 0.16 0.20 0.16 0.29 0.71 0.28 0.19 0.28 0.10 0.29 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.20 0.10 0.1			0.23			c0.32						0.00	
0.34 0.27 0.38 0.02 0.16 0.02 0.16 0.03 0.03 0.02 0.16 0.02 0.16 0.03 0.03 0.03 0.02 0.16 0.03 0.34 0.27 0.38 0.02 0.16 0.03 0.37 1.5 6.5 0.5 0.3 0.1 0.8 0.3 0.37 0.33 0.34 0.37 0.33 0.34 0.37 0.34 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35		0.29								0.00	c0.01		
2.1 1.9 2.2 53.5 54.0 0.94 0.70 2.81 1.00 1.00 2.81 0.2 0.1 0.0 1.00 2.81 0.2 0.1 0.0 1.00 1.00 0.3 0.1 0.0 1.0 0.1 1.8 6.5 53.6 A A A A A A A A A A A A A A A A A A A		34	0.27			0.38				0.02	0.16	90.0	
2 1.8 0.2 0.3 0.1 0.0 1.00 1.00 1.00 1.00 1.00 1.		2.1	1.9			2.2				53.5	54.0	53.7	
2 18 02 03 0.1 0.8 3.7 1.5 6.5 53.6 D D A A A A D D A A A A B D D Y y y y y (s) 1200 Sum of lost time (s) 12.2 (b) Unitization 1.8 (s. 5 m) (120 Sum of lost time (s) 1.2. (b) Unitization 1.8 (s. 6.5 m)	0	<u>8</u> .	0.70			2.81				1.00	1.00	1.00	
3.7 1.5 6.5 53.6 54.7 A A A A A A A B B D D Capacity ratio (s) Utilization (1.20) (1.		9:	0.2			0.3				0.1	0.8	0.3	
A A A A A D D D 1.8 6.5 53.6 1.8 6.5 53.6 Y Y Plelay O Capacity ratio 0.37 HCM 2000 Level of Service A D A HCM 2000 Level of Service B HCM 2000 Level of Service		3.7	1.5			6.5				53.6	54.7	54.0	
y A A A y A A A y A A A e Copacity ratio 0.37 HCM 2000 Level of Service A in (s) 120.0 Sum of lost time (s) 12.2 b 120.0 Sum of lost time (s) B b 12.2 B b 12.2 B	Level of Service	⋖	4			⋖				Ω	□	□	
Y A A D Y TS HCM 2000 Level of Service elay 7.5 HCM 2000 Level of Service o Capacity ratio 0.37 Sum of lost time (s) In (s) 120.0 Sum of lost time (s) Unitization 58.6% ICU Level of Service A Unitization 58.6% ICU Level of Service	Approach Delay (s)		7.8			6.5			53.6			7.7	
7.5 HCM 2000 Level of Service 0.37 Sum of lost time (s) cation 58.6% ICU Level of Service	Approach LOS		4			∢						٥	
7.5 HCM 2000 Level of Service 0.37 Sum of lost time (s) cation \$8.6% ICU Level of Service	Intersection Summary												
acity ratio 0.37 120, Sum of lost time (s) cation 58.6% ICU Level of Service	HCM 2000 Control Delay			7.5	유	M 2000 L	evel of S	ervice		⋖			
120.0 Sum of lost time (s) ration 86.% ICU Level of Service	HCM 2000 Volume to Capacity ra:	ej.		0.37									
Utilization 58.6% ICU Level of Service	Actuated Cycle Length (s)			120.0	Sur	n of lost t	ime (s)			12.2			
Analycic Darind (Min)	Intersection Capacity Utilization			28.6%	ರ	J Level of	Service			ш			
	Analysis Period (min)			15									

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

																																				40	38.8
,	SBR	J. Ja	420	420	Perm		4	4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	2.8			3.0	3.0	0:0	0.0	None							Green			en		
	SBL	۳	10	10	Prot	4		4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	2.8			3.0	3.0	0.0	0.0	None							Start of (oss Aven		
	WBT	4₽	1340	1340	Ϋ́	9		9		38.0	47.6	85.0	%2.09	78.4	3.7	2.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				d 6:WBT			toad & Cr		
ì	EBT	₩	750	750	NA	5		2		38.0	47.6	102.0	72.9%	95.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				:EBTL an			ornwall F		
	EBL	y -	265	265	pm+pt	2	2	2		0.9	12.0	17.0	12.1%	11.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None						_	d to phase 2		ordinated	6: Speers Road/Cornwall Road & Cross Avenue		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated	Splits and Phases: 6: Spe	\$ 02 (R)	102 s

P\\81\24\01\0PA Process\\3. Analysis\\01 - Synchro\FTPM.syn BA Group - EFS

Future Total PM (Ultimate)	Upper Kerr Village (8124-01)
Queues	6: Speers Road/Cornwall Road & Cross Avenue

	1	†	ţ	۶	*	
Lane Group	EBL	EBI	WBT	SBL	SBR	
Lane Group Flow (vph)	276	781	1412	9	438	
v/c Ratio	0.64	0.27	69.0	0.02	0.80	
Control Delay	29.4	3.8	23.2	54.0	31.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	29.4	3.8	23.2	54.0	31.4	
Queue Length 50th (m)	35.9	22.3	133.5	5.6	22.4	
Queue Length 95th (m)	#73.4	37.7	169.8	7.8	41.1	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	432	2916	2053	415	854	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.27	69.0	0.02	0.51	

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

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Future Total PM (Ultimate) Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 6: Speers Road/Comwall Road & Cross Avenue

Movement			t					
figurations (γph) 265 750 1340 15 10 420 cmme (γph) 265 750 1340 15 10 420 cmme (γph) 265 750 1340 15 10 420 cmme (γph) 1900 1900 1900 1900 1900 1900 1900 190	Movement	EBF	EBT	WBT	WBR	SBL	SBR	
time (sph) 265 750 1340 15 10 420 1500 1500 1500 1500 1500 1500 1500 15	Lane Configurations	*	ŧ	₩.		F	N/N	
lume (vph) 265 756 1340 15 10 420 (vphpl) 1900 1900 1900 1900 1900 (vphpl) 6 6 6 6 6 5 8 58 Factor 100 100 100 100 088 Dikes 100 100 100 100 100 088 (vpot) 100 100 100 100 100 085 (vpot) 100 100 100 100 100 085 (vpot) 110 110 100 100 085 (vpot) 110 110 110 100 100 085 (vpot) 110 110 110 110 110 110 110 110 110 11	Traffic Volume (vph)	265	750	1340	15	10	420	
time (s) 6.0 6.6 6.5 5.8 5.8 bites (c) 6.0 6.6 6.6 5.8 5.8 bites (c) 6.0 6.6 6.6 5.8 5.8 bites (c) 6.0 6.6 6.6 5.8 5.8 bites (c) 6.0 6.0 6.6 6.6 5.8 5.8 bites (c) 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	Future Volume (vph)	265	750	1340	15	10	420	
time (s) 6 6 6 6 6 5 8 5 8 5 8 5 8 5 8 5 8 5 8 5	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Factor 1.00 0.995 0.95 1.00 0.88 bikes 1.00 1.00 1.00 1.00 0.88 look 1.00 1.00 1.00 1.00 1.00 1.00 bikes 1.00 1.00 1.00 1.00 1.00 look 1.00 1.00 1.00 0.95 look 0.95 1.00 1.00 0.95 look 0.95 1.00 0.95 look 0.95 1.00 0.95 look 0.96 0.96 0.96 0.96 look 0.97 1.03 0.95 look 0.98 1.00 look 0.99 1.00 look 0.90 0.96 look 0.90 0.90 look 0.90 0	Total Lost time (s)	0.9	9.9	9.9		2.8	5.8	
bikes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	1:00	0.95	0.95		1.00	0.88	
birkes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Frpb, ped/bikes	00.1	1.00	1.00		1.00	1.00	
ted (170) 1.00 1.00 0.059 1.00 (170) 1.00 0.059 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
regard (year) 1703 3810 3867 1805 2733 (year) 1703 3810 3867 1805 2733 (year) 1806 10 100 100 100 100 100 100 100 100 10	Fit Drotacted	0.00	8.0	00.1		0.00	100	
Company 178 3610 3567 1805 2733 1805 1700	Satd Flow (prof)	1703	3610	3567		1805	2733	
(perm) 178 3610 3567 1805 2733 factor, PHF 0.96 0.96 0.96 0.96 0.96 0.96 0.96 (vpl) 276 781 1412 0 10 438 up Flow (vph) 276 781 1412 0 10 438 up Flow (vph) 276 781 1412 0 10 263 p Plases 5 78 78 48 44 44 Phases 5 6 6 6 44 44 Phases 5 7 4 44 44 Phases 5 6 6 6 6 6 Siem, Glob 1131 1131 10.0 10 14 44 Phases 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Fit Permitted	0.10	1.00	1.00		0.95	1.00	
(vph) 276 781 1396 0.96	Satd. Flow (perm)	178	3610	3567		1805	2733	
(vph) 276 781 1396 16 10 438 doction (vph) 276 781 141 0 0 0 263 poten (vph) 276 781 141 0 0 0 263 sts. (#Irn) 5 78 175 5 4% 4% pindes (%) 6% 0% 1% 0% 4% 4% pindes (%) 6% 0% 14 Prot Perm pindes (%) 6% 0% 0% 4% 4 Phases 5 6 6 6 6 6 6 Green, G (s) 113.1 113.1 80.6 14.5 14.5 4 Green, G (s) 113.1 113.1 80.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6 6.6	Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96:0	
duction (vph) 0 0 0 263 p (brown (vph) 276 781 1412 0 10 175 p (brown (vph) 276 781 1412 0 10 175 p (brown (vph) 276 781 1412 0 10 175 p (brown (vph) 276 781 1412 0 10 175 p (brown (vph) 276 781 1412 0 0 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Adj. Flow (vph)	276	781	1396	16	10	438	
by Flow (vph) 276 781 1412 0 10 175 18. (#Irr)	RTOR Reduction (vph)	0	0	0	0	0	263	
isi, #(ifft)	Lane Group Flow (vph)	276	781	1412	0	10	175	
hides (%) 6% 0% 1% 0% 0% 4% pumpti NA NA Prot Perm Phases 5 6 4 4 Phases 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Confl. Peds. (#/hr)	വ			2			
Phrases by the NA NA Prot Perm Phrases 5 2 6 4 Phrases 2 Sreen, G (s) 113.1 113.1 80.6 14.5 14.5 Sreen, G (s) 13.1 13.1 80.6 14.5 Sreen, G (s) 13.1 13.1 80.6 14.5 Sreen, G (s) 13.1 13.1 80.6 14.5 Sreen, G (s) 10.0 1.00 1.00 1.00 Sreen, G (s) 1.00 1.00 1.00 1.00 Sreen, G (s) 1.00 1.00 1.00 1.00 Sreen, G (s) 1.00 Sreen, G	Heavy Vehides (%)	%9	%0	1%	%0	%0	4%	
Phases 5 2 6 4 Phases 2 6 4 Phases 2 6 4 Phases 2 6 Phase	Turn Type	pm+pt	NA	NA		Prot	Perm	
Phases 13.1 13.1 80.6 14.5 14.5 37.6 14.6 14.6 14.6 14.6 14.6 14.6 14.6 14	Protected Phases	2	2	9		4		
Green, G (s) 113.1 113.1 80.6 14.5 14.5 Steen, G (s) 113.1 113.1 80.6 14.5 14.5 Steen, G (s) 14.1 14.5 14.5 14.5 Steen, G (s) 13.1 13.1 13.1 14.5 Time (s) 6.0 6.6 6.6 5.8 5.8 5.8 Adension (s) 3.5 5.0 5.0 3.0 3.0 3.0 Cap (wh) 432 2916 2053 186 28.3 3.0 Cap (wh) 432 2916 20.2 0.0 0.0 0.0 Perm 0.39 2.0 0.0 0.0 0.0 0.0 elsy, d1 2.8 3.2 2.0 5.0 6.0 6.0 elsy, d1 3.5 2.2 8 6.4 E E Delay (s) 6.0 7 6.0 6.0 6.0 6.0 In Summary 2.2 8	Permitted Phases	2					4	
13	Actuated Green, G (s)	113.1	113.1	9.08		14.5	14.5	
Falio 0.81 0.81 0.58 0.10 0.10	Effective Green, g (s)	113.1	113.1	9.08		14.5	14.5	
Time (s) 6.0 6.6 6.6 5.8 5.8 5.8 5.8 5.9 5.0 5.0 5.0 3.0 5.0 5.0 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Ratio	0.81	0.81	0.58		0.10	0.10	
tension (s) 3.5 5.0 5.0 3.0 3.0 3.0 4ension (s) 4.22 5.0 5.0 3.0 3.0 3.0 4.22 5.0 5.0 3.0 3.0 3.0 4.22 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
Cap (vph) 432 2916 2063 186 283 Port c0.12 0.22 c0.40 0.01 Perm c0.12 0.22 c0.40 0.05 c0.66 Perm 0.64 0.27 0.69 0.05 0.62 0.62 elsy, d1 285 3.3 20.9 56.6 60.1 0.00 al Delay, d2 3.2 2.2.8 56.7 64.1 4.0 ervice C A C E E E Delay (s) 10.9 22.8 64.0 E E E LOS B C E E E E no Summary B C E E C Oyler Length (s) 140.0 Sum of lost time (s) 18 An Capacity Utilization 15.9 ICUL Level of Service	Vehicle Extension (s)	3.5	5.0	5.0		3.0	3.0	
Prot c0,12 0,22 c0,40 0,01 Perm 0,39 0,06 Perm 0,39 0,06 Pelay,d1 28.5 3.3 20.9 56.6 60.1 Pelay,d1 28.5 3.3 20.9 56.6 60.1 Pelay,d2 3.2 0.2 1.9 0.1 4.0 Pervice C A C E E Delay (s) B C E N Summary D'Alume to Capacity ratio O'Alume to Capacity ratio O'Alume to Capacity ratio O'Alume to Capacity ratio 140	Lane Grp Cap (vph)	432	2916	2053		186	283	
Perm 0.39 0.06 0.64 0.27 0.69 0.05 0.06 Delay, d1 28.5 3.3 20.9 56.6 60.1 an Pactor 1.00 1.00 1.00 1.00 1.00 al Delay, d2 3.2 1.9 56.6 60.1 4.0 ervice 2 1.9 0.1 4.0 1.00 1.00 Los A C E E E E E Delay (s) B C E E E E E Los B C B C E E E A control Delay B C B C B C A C D C C C C C D C D C D C D C D C D C D C D C D C D	//s Ratio Prot	c0.12	0.22	c0.40		0.01		
elay, d1 28.5 3.3 20.9 56.5 0.62 nn Factor 1.00 1.00 1.00 1.00 1.00 al Delay, d2 3.2 1.9 56.6 60.1 al Delay, d2 3.2 1.9 0.1 4.0 ervice C A C E E Delay (s) 10.9 22.8 64.0 nn Summary n Summary A C B C E Delay (s) 4.0 4.0 To Summary A C C C C C C C C C C C C C C C C C C	//s Ratio Perm	0.39					90.00	
2 3.3 20.9 56.6 60.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2.19 0.1 4.0 2.5 22.8 56.7 64.1 A C E E E 10.9 22.8 64.0 B C E E 24.8 HCM 2000 Level of Service 0.67 Sum of lost time (s) 75.9% ICU Level of Service	//c Ratio	0.64	0.27	0.69		0.02	0.62	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	28.5	3.3	20.9		9.99	60.1	
2 0.2 1.9 0.1 4.0 7 3.5 2.2 5.7 6.4.1 10.9 2.8 64.0 B C E E E E E E E E E E E E E E E E E E	Progression Factor	1:00	1.00	1.00		1.00	1:00	
7 3.5 22.8 56.7 64.1 10.9 22.8 64.0 10.9 22.8 64.0 10.0 E 24.8 HCM2000 Level of Service 0.67 140.0 Sum of lost time (s) 75.9% ICU Level of Service 15.9% ICU Level of Service	Incremental Delay, d2	3.2	0.2	0.		0.1	4.0	
A C E E E E E E E E E E E E E E E E E E	Delay (s)	31.7	3.5	22.8		29.7	64.1	
10.9 22.8 64.0 B C E 24.8 HCM 2000 Level of Senrice 0.67 Sum of lost time (s) 75.9% ICU Level of Service 15.9% ICU Level of Service 15.9% ICU Level of Service	Level of Service	ပ	V	ပ		ш	ш	
24.8 HCM 2000 Level of Senice 0.67 10.05 140.0 Sum of lost time (s) 75.9% ICU Level of Service	Approach Delay (s)		10.9	22.8		64.0		
24.8 HCM 2000 Level of Service 0.67 10.0 Sum of lost time (s) 75.9% ICU Level of Service	Approach LOS		В	O		ш		
24.8 HCM 2000 Level of Service 0.67 140.0 Sum of lost time (s) 18 75.9% ICU Level of Service	Intersection Summary							
0.67 140.0 Sum of lost time (s) 18 75.9% ICU Level of Service 15	HCM 2000 Control Delay			24.8	\	CM 2000	Level of Service	v
140.0 Sum of lost time (s) 18. 75.9% ICU Level of Service 15.15	HCM 2000 Volume to Capa	acity ratio		0.67				
Utilization 75.9% ICU Level of Service	Actuated Cycle Length (s)			140.0	Su	ım of lost	time (s)	18.4
	Intersection Capacity Utiliza	ation		75.9%	೨	U Level o	if Service	٥
	Analysis Pariod (min)			15				

HCM Unsignalized Intersection Capacity Analysis Future Total PM (Ultimate) 7: Kerr Street & Prince Charles Drive

EBL EBT WBL 10 0 10 10 10 0 10 10 10 0 10 10 10 0 10 10 10 0 10 10 11 0 11 11 2 3.6 0.36 0.96 0.96 11 0 11 11 2 3.6 1.75 0.79 11 7 7 1156 4.81 1137 7.1 7 0 6.2 7.3 3.1 100 97 91 11 1 1 2 2 11 1 1 2 2 11 1 1 5 2 11 1 1 5 2 11 1 1 5 2 11 1 1 5 2 11 1 1 5 2 11 1 1 5 2 11 26 11 26 11 27 11 28 11 990 11 28 11 900 11 0 0.2 0.5 11 26 0.19 11 27 0.15 11 28 11 900 11 0 0.2 0.5 11 26 0.15 11 26 0.15 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 26 11 32 11 32 11 11 32 11 36 11 31 31 31 31 31 31 31 31 31 31 31 31 3										l			
HEBL EBT EBR WBI 10 0 10 10 10 10 10 10 10 10 10 10 10 10		4	†	~	>	ļ	4	•	←	•	۶	-	•
(a) 10 (b) 10 10 10 10 10 10 10 10 10 10 10 10 10	lovement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
h) 10 0 10 10 10 10 10 10 10 10 10 10 10 1	ane Configurations		4			4			4			4	
h) 10 0 10 10 10 10 0 0% 0% 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	raffic Volume (veh/h)	9	0	9	9	0	9	2	542	10	20	029	25
Stop 11 0 11 11 11 11 11 11 11 11 11 11 11 11	uture Volume (Veh/h)	10	0	10	10	0	30	2	545	10	20	029	25
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	ign Control		Stop			Stop			Free			Free	
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	rade		%0			%0			%0			%0	
11 0 11 11 20 3.6 3.6 1.1 1.1 1.1 1.1 1.157 1155 481 1137 7.1 7.0 6.2 7.1 7.1 7.0 6.2 7.1 1.19 117 433 3.5 91 100 97 91 119 117 433 127 11 32 12 5 11 13 50 752 11 13 50 752 11 13 50 752 11 13 50 752 11 13 50 752 12 43 50 752 13 50 752 14 10 0.2 0.5 15 50 0.0 0.2 0.5 16 10 0.2 0.5 17 10 0.2 0.5 18 10 0.2 0.5 19 10 0.2 0.5 10 0.2 0.5 10 0.2 0.5 11 14 14 15 11 15 11 15 11 11 11 11 11 11 11 11	eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
20 3.6 1.1 2 1.1 1.157 1155 481 1137 7.1 7.0 6.2 7.1 7.1 7.0 6.2 7.1 91 100 97 91 127 119 117 433 127 EB1 WB1 NB1 SB1 22 4.5 33 35 91 100 97 91 17 119 117 433 127 11 32 11 26 11 32 11 26 11 32 11 26 11 32 10 0.02 0.5 0.12 0.15 0.01 0.02 0.12 0.15 0.01 0.02 0.12 0.15 0.01 0.02 0.12 0.15 0.01 0.02 0.12 0.15 0.01 0.02 0.14 0.02 0.15 0.15 0.00 0.2 0.6 0.16 0.00 0.2 0.6 0.17 0.00 0.2 0.6 0.18 0.00 0.2 0.6 0.19 0.00 0.2 0.6 0.10 0.00 0.2 0.6	ourly flow rate (vph)	1	0	1	7	0	32	2	574	1	21	202	26
3.6 1.1 2.2 1.1 1.1 1.15	edestrians		20			30						2	
1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1	ane Width (m)		3.6			3.6						3.6	
2 0.79 0.79 0.75 0.79 0.79 0.75 0.79 0.79 0.79 0.79 0.79 0.79 0.79 0.79	/alking Speed (m/s)		[-			1.1						7:	
1157 1155 481 1137 1155 481 1137 1155 481 1137 1155 481 1137 1155 481 1137 1155 481 1137 1155 481 1137 1155 481 1137 1155 481 1137 11	ercent Blockage		2			က						0	
e 1406 1405 738 1390 1157 1155 481 1137 7.1 7.0 6.2 7.1 3.5 4.5 3.3 3.5 91 100 97 91 119 117 433 127 2.2 43 900 11 1 5 21 11 32 11 26 11 32 11 26 11 32 0.0 0.2 0.5 D C A A Y PARTINICIPATION 140 170 0.2 0.5 D C A A PARTINICIPATION 140 0.2 0.5 D C A A PARTINICIPATION 140 0.2 0.5 D C A A PARTINICIPATION 140 0.2 0.5 D C A A 140 0.2 0.5	ight turn flare (veh)												
e 1406 1405 738 1390 e 1406 1405 738 1390 l 1157 1155 481 1137 7.1 7.0 6.2 7.1 3.5 4.5 3.3 3.5 91 100 97 91 119 117 433 127 11 32 43 590 752 11 13 5 11 11 32 11 26 11 32 0.0 0.2 0.5 0.2 0.9 0.0 0.2 0.5 0.5 26.9 20.0 0.2 0.6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ledian type								None			None	
1406 1405 738 1390 1406 1405 738 1390 1415 1455 481 1437 1415 1455 481 1437 1416 140 97 91 1419 147 433 137 141 141 5 21 141 141 5 21 141 141 5 21 141 141 5 21 141 141 5 21 141 32 44 9 90 150 0.15 0.01 0.02 161 0.25 0.01 0.02 162 0.15 0.15 0.01 163 0.15 0.15 0.01 164 0.2 0.5 165 0.15 0.15 0.01 165 0.15 0.15 0.01 165 0.15 0.15 0.01 165 0.15 0.15 0.15 165	ledian storage veh)												
1406 1405 738 1390 1	pstream signal (m)								238			127	
e 1406 1405 738 1390 1157 1156 481 1137 7.1 7.0 6.2 7.1 3.5 4.5 3.3 3.5 91 100 97 91 119 117 433 127 11 11 5 11 11 32 11 26 11 32 11 26 11 32 11 26 11 32 0.0 0.2 0.5 D C A A A Y 11612041000 P O O O O O O O O O O O O O O O O O O	X, platoon unblocked	0.79	0.79	0.75	0.79	0.79	0.92	0.75			0.92		
1157 1155 481 1137 7.1 7.0 6.2 7.1 7.1 6.2 7.1 7.1 6.2 7.1 7.1 6.2 7.1 7.1 7.1 6.2 7.1 7.1 7.1 6.2 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1	C, conflicting volume	1406	1405	738	1390	1412	614	751			615		
1157 1155 481 1137 7.1 6.2 7.1 7.0 6.2 7.1 7.1 6.2 7.1 7.1 6.2 7.1 7.1 6.2 7.1 7.1 6.2 7.1 7.1 6.2 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1 7.1	C1, stage 1 conf vol												
1157 1155 481 1137 1157 1155 481 1137 17.0 6.2 7.1 7.0 6.2 7.1 1.1 6.2 7.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2 1.1 1.1 6.2	C2, stage 2 conf vol												
7.1 7.0 6.2 7.1 3.5 4.5 3.3 3.5 91 100 97 91 119 117 433 127 12 43 590 752 11 11 5 21 11 32 11 26 116 26.9 20.0 0.2 0.5 D C A A A Y TIGINALIAN TIGI	Cu, unblocked vol	1157	1155	481	1137	1165	539	499			240		
3.5 4.5 3.3 3.5 91 100 97 91 119 117 433 127 91 120 97 91 120 91 91 91 91 91 91 91 91 91 91 91 91 91	S, single (s)	7.1	7.0	6.2	7.1	6.5	6.2	4.3			4.1		
3.5 4.5 3.3 3.5 4.5 1.0 4.0 97 91 110 97 91 110 97 91 110 97 91 91 91 91 91 91 91 91 91 91 91 91 91	5, 2 stage (s)												
## 100 97 91 110 97 91 110 97 91 110 97 91 110 97 91 110 97 91 110 91 91 91 91 91 91 91 91 91 91 91 91 91	(s)	3.5	4.5	3.3	3.5	4.0	3.3	2.4			2.2		
H19 117 433 127 EB1 WB1 NB1 SB1 22 43 590 752 11 1 1 5 21 11 32 11 26 186 283 719 999 0.12 0.15 0.01 0.02 M) 3.0 4.0 0.2 0.5 D C A A A 26.9 20.0 0.2 0.6 D C A A A 26.9 20.0 0.2 0.6 D C A A A 26.9 20.0 0.2 0.6 D C A A A 26.9 20.0 0.2 0.6 D C A A A 26.9 20.0 0.2 0.6 D C A A A 26.9 20.0 0.2 0.6	0 queue free %	9	100	26	91	100	8	66			86		
EB1 WB1 NB1 SB1 752 43 590 752 11 1 1 1 5 21 1 1 1 1 5 21 1 1 1 1 1	M capacity (veh/h)	119	117	433	127	143	488	719			606		
22 43 590 752 11 11 5 21 11 12 1 2 11 86 283 719 999 0.12 0.15 0.01 0.02 26.9 20.0 0.2 0.5 D C A A A 26.9 20.0 0.2 0.6 D C O.5 D C O.5 D C O.5 D C O.5 D C O.5	irection, Lane #	EB 1	WB1	NB1	SB 1								
m) 30 4.0 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.2 0.6 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7	olume Total	22	43	290	752								
m) 3.0 4.0 0.2 0.5 m) 3.0 4.0 0.2 0.5 C A A A A A A A A A A A A A A A A A A A	olume Left	Ξ	=	2	77								
(m) 3.0 4.0 0.2 0.5 0.0 0.2 0.5 0.0 0.2 0.5 0.0 0.2 0.5 0.0 0.2 0.5 0.0 0.2 0.6 0.0 0.2 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0	olume Right	Ħ	32	Ξ	56								
m) 3.0 4.0 0.02 0.05 26.9 20.0 0.2 0.5 0.01 0.02 0.5 0.0 0.2 0.5 0.0 0.2 0.5 0.0 0.2 0.5 0.0 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	HS.	186	283	719	606								
m) 30 4,0 0.2 0.5 26,9 20,0 0.2 0.6 26,9 20,0 0.2 0.6 D C A A 26,9 20,0 0.2 0.6 Y	olume to Capacity	0.12	0.15	0.01	0.02								
269 20,0 0,2 0,6 D C A A A 26,9 20,0 0,2 0,6 D C C A A A A A A A A A A A A A A A A A	inene Length 95th (m)	3.0	4.0	0.2	0.5								
D C A A A 26.9 20.0 0.2 0.6 D C V V V V V V V V V V V V V V V V V V	ontrol Delay (s)	26.9	20.0	0.2	9.0								
26.9 20.0 0.2 0.6 D C V	ane LOS	□	O	∢	∢								
y 1.4 1.18iiradiaa	pproach Delay (s)	26.9	20.0	0.2	9.0								
mmary 1.4	pproach LOS	٥	O										
1.4 64.0%	Itersection Summary												
Sacily I Hilization 61 20/	verage Delay			1.4									
0/2:10	ntersection Capacity Utilization	5		61.2%	⊴	J Level o	ICU Level of Service			ш			
15	nalvsis Period (min)			15									

P.18112410110PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Synchro 11 Report Page 17

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

	í	0		ŀ	ŀ		
Movement	EBL	EBR	NBL	NBT	SBI	SBR	
Lane Configurations	>-			÷	2,		
Traffic Volume (veh/h)	15	10	2	240	630	40	
Future Volume (Veh/h)	15	10	2	240	630	40	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	16	=	2	268	663	42	
Pedestrians	32						
Lane Width (m)	3.6						
Walking Speed (m/s)							
Percent Blockage	က						
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	0.84	0.79	0.79				
vC, conflicting volume	1297	719	740				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	920	202	534				
IC, single (s)	6.4	6.3	4.3				
.C, 2 stage (s)							
F(s)	3.5	3.4	2.4				
on dnene tree %	ස	97	66				
oM capacity (veh/h)	229	419	723				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	27	573	202				
Volume Left	16	2	0				
Volume Right	7	0	42				
SH	281	723	1700				
Volume to Capacity	0.10	0.01	0.41				
Queue Length 95th (m)	2.4	0.2	0.0				
Control Delay (s)	19.2	0.2	0.0				
Lane LOS	ပ	∢					
Approach Delay (s)	19.2	0.2	0.0				
Approach LOS	O						
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization	ıtion		45.8%	೨	U Level o	ICU Level of Service	V

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Timings
Future Total PM (Ultimate)
9: Kerr Street & Stewart Street

		1																																
→	SBT	4	250	520	Ϋ́	9		9		24.0	32.0	45.0	%0.09	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	35						
۶	SBL		22	22	pm+pt	-	9	-		0.9	10.0	10.0	13.3%	7.0	3.0	0.0			Lead	Yes	3.0	3.0	0.0	0.0	None									
—	NBT	4	420	420	Ν	2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		19	10	Perm		2	2					46.7%		3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				d Green		
Ļ	WBT	4	15	15	Ϋ́	∞		∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				L, Start o		
\	WBL		9	10	Perm		∞	œ		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				nd 6:SBT		
†	EBT	4	9	10	Α	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	70				2:NBTL a		
1	EBL		20	20	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				to phase	1	dinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control I ype: Actuated-Coordinated

Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street & Stewart Street

10.5

10.5

10.5

10.5

10.5

10.5

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P.\81\2401\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Queues 9: Kerr Street & Stewart Street

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

	ì		-	•	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	84	109	484	629	
v/c Ratio	0.29	0.29	0.37	0.57	
Control Delay	21.6	10.0	8.1	11.2	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	8.1	11.2	
Queue Length 50th (m)	8.5	3.4	20.5	35.1	
Queue Length 95th (m)	16.5	13.0	60.5	106.8	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	4	225	1299	1192	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.37	0.57	

P:181/24/01/OPA Process\(\alpha\). Analysis\(\text{01}\) - Synchro\(\text{FTPM}\).syn BA Group - EFS

> Synchro 11 Report Page 19

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

Ť

520 520 520 1900 0.99 0.99 11.00 0.99 11.00

Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Geat Flow (vpha)
Total Lost time (s)
Lane Uif Fador
Frb, pedbikes
Frb, pedbikes
Frt Protected
Sard. Flow (perm)
Fit Pemitted
Sard. Flow (perm)
RTOR Reduction (vph)
Lane Group Flow (vph)
Confl. Flow (vph)
Confl. Flow (vph)
Confl. Flow (vph)
Bus Blockages (#fr)

55 55 1900

15

75 75 1900

1000

15 1900

50

0.92 565 3 676 676 NA

0.92 60 0 0 25 1%

0.92 16 0 0 25 17%

483

0.92 11 0 0 0%

0.92 82 0 0 2%

4 88 4

pm+pt

ž

Perm

Perm

Perm

% 0

13% NA

20% NA 2

0 0 15 0

0.92 16 0 0 0%

Timings	 Dorval Road & Wyecroft Road
Him	10:

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

→	SBT	4413	1170	1170	ΑA	9		9		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0:0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	Q-Min	7.0	27.0	0											
۶	SBL	F	140	140	Prot	-		-		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None											P 04	S	% 4 ⊳	
←	NBT	4413	1315	1315	₹	2		2		20.0	41.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0									4	·	4
€	NBL	*	95	92	pm+pt	2	2	2		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None														
4	WBR	*	495	495	vo+md	_	∞	-		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0:0	0.0	None							f Green				€03	21s	<u>√</u>	21.0
ļ	WBT	*	95	92	- VA	∞		∞		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				T, Start o							
>	WBL	r	09	09	pm+pt	က	∞	က		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SB			t Road				
†	EBT	₽ ₽	225	225	ΑN	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				2:NBTL			10: Dorval Road & Wyecroft Road				
4	EBL	K.	382	382	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							to phase		nated	al Road 8	G		G	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Phases:	Ø1 • Ø2 (R)	42 s	→ Ø5 + Ø6(R)	47 0

51.0 51.0 0.68 5.4 4.0

51.0 51.0 0.68 5.4 4.0 4.0

13.2 0.18 5.4 4.0 267

13.2 0.18 5.4 4.0 232

Turn Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated glC Ratio
Clearance Time (s)
Wehicle Extension (s)

0.59

6.4 1.00 0.8 7.3

0.26 0.39 5.2 1.00 0.9 6.1

0.03 0.16 26.2 1.00 0.4 26.5 C C C C C C C C C

C0.05 0.29 26.8 1.00 1.0 C C C C C C

> Progression Factor Incremental Delay, d2

Uniform Delay, d1

Level of Service Approach Delay (s) Approach LOS

Lane Grp Cap (vph)
v/s Ratio Prot
v/s Ratio Perm

4

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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13.8

Sum of lost time (s) ICU Level of Service

9.6 0.56 75.0 82.5%

HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio

Actuated Cyde Length (s) Intersection Capacity Utilization Analysis Period (min) c Critical Lane Group

HCM 2000 Level of Service

P.\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

Queues 10: Dorval Road & Wyecroft Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

28.3 0.0 28.3 0.0 28.3 95.5 134.0 672.1

152 0.21 39.9 0.0 39.9 14.8 25.2

NBL NBT 103 1472 0.43 0.88 152 40.4 0.0 0.0 15.2 40.4 8.3 135.6 m11.8 m#157.5 494.4

538 0.88 45.4 0.0 45.4 91.9

65 65 0.22 29.9 0.0 29.9 10.9 19.4

430 0.57 31.3 0.0 31.8 46.3 155.6

418 0.98 90.1 0.0 90.1 51.2 #82.7

Lane Group Flow (vph)

MBT 103 0.47 54.9 54.9 54.9 23.0 37.7

0.67

0.21

0.88

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

Queue shown is maximum after two cycles.

The control of the percentile queue is metered by upstream signal.

0.39

0.22

0.43

372 372 0 0

115.0 0 0 0 0 0 0 0

1001

Control Delay
Queue Delay
Queue Length Soft (m)
Queue Length 95th (m)
Queue Length 95th (m)
Turn Bay Length (m)
Base Capacity (mp)
Starvation Cap Reduch
Spillback Cap Reduch
Storage Cap Reduch
Storage Cap Reduch
Reduced vic Ratio

728

65.0 261

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total PM (Ultimate) Upper Kerr Village (8124-01)

Figure Control Con	FBL FBT FBR WBL WBT WBR NBL NBT NBR SBL 386 225 170 60 95 495 95 1315 40 140 387 225 170 60 95 495 95 1315 40 140 388 225 170 60 95 495 95 1315 40 140 400 1900 1900 1900 1900 1900 1900 1900 50 7.0 5.0 7.0 5.0 7.0 5.0 1.00 0.99 1.00 1.00 1.00 1.00 1.00 1.00 0.94 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 3213 3233 4.0 1.00 1.00 0.95 1.00 1.00 1.00 0.94 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.94 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.94 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.95 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 0.95 1.00 0.95 0.95 0.95 0.95 1.00 0.95 0.		1	†	/	-	↓	4	•	←	•	۶	→	*
National Part National Par	100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
386 225 170 66 95 495 95 1315 40 1410 1770 180 98 495 95 1315 40 1410 1770 180 98 495 95 1315 40 1410 1770 180 98 495 95 1315 40 1410 1770 180 98 495 95 1315 40 1410 1770 180 98 495 95 1315 40 1410 1770 180 98 100 1800 1800 1800 1800 1800 18	385 225 170 60 95 495 95 1315 40 140 1900	Lane Configurations	*	₩		*	*	*-	-	4413		K.	444	
1800 1900	385 225 170 60 95 495 95 1315 40 140 50 70 1900 <	Traffic Volume (vph)	382	225	170	09	95	495	95	1315	40	140	1170	2
1900 1900	1900 1000 1000	Future Volume (vph)	382	225	170	09	92	495	92	1315	40	140	1170	'n
Signature Sign	Solution	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	190
100 0.95 1.00 1.00 1.00 0.91 0.97 0.91 0.97 0.91 0.97 0.95 1.00 1	1,00 0.97 0.95 1.00 1.00 1.00 0.91 0.97 1,00 0.99 1.00 1.00 1.00 1.00 1.00 1.00 1,00 0.94 1.00 1.00 1.00 1.00 1.00 1.00 1,00 0.94 1.00 1.00 1.00 1.00 1.00 1.00 1,00 0.94 1.00 1.00 1.00 1.00 1.00 1.00 1,00 0.94 1.00 1.00 1.00 1.00 1.00 1.00 2,10 0.95 1.00 0.95 1.00 0.95 1.00 0.95 32,13 32,33 1783 1783 1.92 0.92 0.92 0.92 32,13 32,33 34,2 1.27 1.590 2.33 5.41 3.502 32,13 32,33 34,2 1.27 1.590 2.33 5.41 3.502 1,00 1.26 0 0 0 5.4 0 3 0 0 1,00 1.26 0 0 0 5.4 0 3 0 0 1,00 1.26 0 0 0 5.4 0 3 0 0 1,00 1.26 0 0 0 5.4 0 3 0 0 1,00 1.26 0 0 0 0 5.4 0 3 0 0 1,00 1.26 0 0 0 0 0 3 0 0 1,00 1.26 0 0 0 0 0 3 0 0 1,00 1.26 0 0 0 0 0 0 0 1,00 1.00 0.01 0.01 0.01 0 0 0 1,00 1.00 0.01 0.01 0.01 0.01 1,00 1.00 0.02 0.05 0.01 0.01 1,00 1.00 1.00 1.00 1.00 0.02 0.02 1,00 1.00 1.00 1.00 1.00 0.02 0.03 1,00 1.00 1.00 1.00 1.00 0.02 0.04 1,00 1.00 1.00 1.00 1.00 0.03 1,00 1.00 1.00 1.00 1.00 0.03 1,00 1.00 1.00 1.00 1.00 0.03 1,00 1.00 1.00 1.00 1.00 0.03 1,00 1.00 1.00 1.00 1.00 0.03 1,00 1.00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 0.04 0.05 1,00 1.00 1.00 0.04 0.05 1,00 1.00 0.04 0.05 0.05 1,00 1.00 0.04 0.05 0.05 1,00 1.00 0.04 0.05 0.05 1,00 1.00 0.04 0.05 0.05 1,00 1.00 0.04 0.05 0.05 1,00 1.00	Total Lost time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
1,00	1,00 0.99	Lane Util. Factor	0.97	0.95		1.00	1.00	1.00	1.00	0.91		76.0	0.91	
1.00	1,00	Frpb, ped/bikes	00.1	0.99		00.1	1.00	0.99	1.00	1.00 0.1		0.1	9.1	
1,00 0.94 1,00 1,00 0.455 1,00 0.455 1,00 0.455 1,00 0.95 1,00	1,00	Fipb, ped/bikes	9.5	00.1		0.1	00.1	00.1	0.1	0.1		9.1	9.0	
10.0 10.0	1.00	F.R. D	00.1	0.94		00.1	0.1	0.00	00.1	0.1		9.9	0.30	
10	10	Fit Protected	0.90	00.1		1702	1.00	00.1	1726	0.10		0.90	0.10	
10.00	Control of the cont	Satd. Flow (prot)	3213	3233		1/83	1711	1280	1/30	204		2005	4972	
F 5213 5233 942 1727 1530 233 944 1 5502 4937 2 1 692 092 092 092 092 092 093 093 093 093 093 093 093 093 093 093	National Part National Property National	Fit Permitted	0.95	00.1		0.50	1.00	1.00	0.13	0.1		CS:0	0.1	
F 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	F	Satd. Flow (perm)	3213	3233		345	17.71	1590	233	5041		3202	4972	ľ
A	18	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0
h) 10 126 0 0 0 54 0 3 0 0 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1, 0 126 0 0 0 54 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	418	242	185	65	103	238	103	1429	43	152	1272	7
h) 418 304 0 65 103 484 103 1469 0 152 1483 1 4 4 2 4 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	RTOR Reduction (vph)	0	126	0	0	0	24	0	က	0	0	17	
1	9% 4% 2% 1% 10% 1% 4 % 2 % 1% 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0	Lane Group Flow (vph)	418	304	0	65	103	484	103	1469	0	152	1483	
9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1% 10% 10% 10% 10% 10% 10% 10% 10%	9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Confl. Peds. (#/hr)	_		4	4		_	_		_	_		
Prof. NA	Prof. NA Dm+pt NA Dm+pt NA Dm-pt Dm-pt NA	Heavy Vehicles (%)	%6	4%	5%	1%	10%	1%	4%	5%	2%	%0	1%	
Prof NA pm+pt NA pm+pt NA Prot 7	Prof. NA Pm+pt NA Pm+pt NA Prof. NA 1	Bus Blockages (#/hr)	0	2	0	0	0	0	0	3	0	0	0	
160 23.1	160 23.1	Turn Type	Prot	NA		pm+pt	¥	vo+mq	pm+pt	M		Prot	N	
160 23.1	16.0 23.1 25.1 16.1 41.1 49.8 38.9 25.0	Protected Phases	7	4		က	∞	-	2	2		-	9	
16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1 49.8 38.9 25.0 16.0 2.1 0.1 2.0 1.2 5.0 5.0 5.0 5.0 5.0 5.0 16.0 1.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 16.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 16.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 17.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1.1 49.8 38.9 25.0 16.0 23.1 25.1 16.1 4.1 49.8 38.9 25.0 16.0 1.0 0.2 1 0.2 1 0.4 0.4 0.5 0.0 16.0 2.0 2.0 2.0 2.0 5.0 5.0 5.0 5.0 5.0 16.0 2.0 2.0 2.0 2.0 2.4 2.0 0.0 0.0 0.0 16.0 1.0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Permitted Phases				∞		∞	2					
16.0 23.1 25.1 16.1 4.11 4.98 38.9 25.0 16.0 23.1 25.1 16.1 4.11 4.98 38.9 25.0 16.0 2.1 0.21 0.13 0.34 0.34 0.32 0.21 16.0 5.0 5.0 5.0 5.0 5.0 5.0 16.0 5.0 5.0 5.0 5.0 5.0 5.0 16.0 5.0 5.0 5.0 5.0 5.0 5.0 16.0 5.0 5.0 5.0 5.0 5.0 5.0 16.0 5.0 5.0 5.0 5.0 5.0 5.0 16.0 1.0 0.0 0.0 0.0 0.0 0.0 16.0 1.0 1.0 1.0 1.0 0.0 0.0 16.0 1.0 1.0 1.0 1.0 0.0 17.0 1.0 1.0 1.0 0.0 18.0 1.0 1.0 1.0 0.0 19.0 1.0 1.0 1.0 0.0 19.0 1.0 1.0 1.0 0.0 19.0 1.0 1.0 1.0 0.0 19.0 1.0 1.0 1.0 19.0 1.0 1.0 1.0 19.0 1.0 1.0 1.0 19.0 1.0 1.0 1.0 19.0 1.0 1.0 1.0 19.0 1.0 1.0	16.0 23.1	Actuated Green, G (s)	16.0	23.1		25.1	16.1	41.1	49.8	38.9		25.0	53.0	
0.13 0.19 0.21 0.13 0.34 0.41 0.32 0.21 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	0.13 0.19 0.21 0.13 0.34 0.41 0.32 0.21 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 5.0 7.4 7.2 5.1 8.43.2 38.9 7.8 37.3 22.3 38.7 39.3 5.1 7.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 5.2 7.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 5.2 7.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 5.0 7.0 5.0 5.0 7.0 5.0 7.0 7.0 5.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 5.0 7.0 7.0 7.0 5.0 7.0 5.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	Effective Green, g (s)	16.0	23.1		25.1	16.1	41.1	49.8	38.9		25.0	53.0	
5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	5.0 7.0 5.0 <td>Actuated g/C Ratio</td> <td>0.13</td> <td>0.19</td> <td></td> <td>0.21</td> <td>0.13</td> <td>0.34</td> <td>0.41</td> <td>0.32</td> <td></td> <td>0.21</td> <td>0.44</td> <td></td>	Actuated g/C Ratio	0.13	0.19		0.21	0.13	0.34	0.41	0.32		0.21	0.44	
5.0 5.0 <td> 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0</td> <td>Clearance Time (s)</td> <td>5.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td>2.0</td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td></td>	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Clearance Time (s)	5.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
428 622 260 231 544 233 1634 729 60.13 0.09 0.02 0.06 6.019 0.04 6029 0.04 0.08 0.49 0.25 0.45 0.89 0.44 0.90 0.21 51.8 43.2 38.9 47.8 37.3 22.3 38.7 39.3 1.00 1.00 1.00 1.00 1.00 0.82 0.94 0.03 2 37.4 1.3 1.1 2.9 17.3 1.5 41.1 39.6 F D D D D D B D D D B D B D D D B B D D D D Capacity ratio 0.91 1.20 0.91	428 622 260 231 544 233 1634 729 60.13 0.09 0.02 0.06 6.019 0.04 6.029 0.04 0.03 0.02 0.06 6.019 0.04 6.029 0.04 0.03 0.04 0.02 0.05 0.04 0.02 0.04 1.00 1.00 1.00 1.00 1.00 0.02 0.04 1.00 2 37.4 1.3 1.1 2.9 17.3 1.5 4.8 89.2 44.5 40.0 5.07 54.7 19.7 41.1 39.6 F D D D D B D D D 66.5 5.27 D B D D 7 Capacity ratio 0.91 It (c) Capacity ratio 0.91 It (c) Capacity ratio 1.20 0.91 It (c) Capacity ratio 0.91 It (c) Capacity ratio 1.20 0.91	Vehicle Extension (s)	2.0	2.0		2.0	2.0	5.0	5.0	2.0		2.0	2.0	
Co.13 0.09 0.02 0.06 co.19 0.04 co.29 0.04 0.08 0.49 0.05 0.01 0.12 51.8 43.2 38.9 47.8 37.3 22.3 38.7 39.3 1.00 1.00 1.00 1.00 1.00 0.82 0.94 1.00 2.37.4 1.3 1.1 2.9 17.3 1.5 4.8 0.03 8.92.4 44.5 40.0 5.7 54.7 19.7 41.1 39.6 F D D D D B D D D 6.6.5 5.7 54.7 19.7 39.7 6.5 7 8.7 3 3.7 39.7 6.5 8.5 8.7 8.7 39.7 6.5 8.5 8.7 8.7 8.7 39.7 6.5 9.7 8.7 8.7 8.7 8.7 8.7 6.5 9.7 8.7 8.7 8.7 8.7 6.5 9.7 8.7 8.7 8.7 6.5 9.7 8.7 8.7 8.7 6.5 9.7 8.7 8.7 8.7 6.5 9.7 8.7 8.7 8.7 6.5 9.7 8.7 8.7 6.5 9.7 8.7 8.7 6.5 9.7 8.7 8.7 6.5 9.7 8.7 8.7 6.5 9.7 8.7 8.7 6.5 9.7 8.7 6.5 9.7 8.7 6.7 9.7 6.7	Co.13 0.09 0.02 0.06 co.19 0.04 co.29 0.04 0.08 0.49 0.25 0.45 0.89 0.44 0.02 1.00 1.00 1.00 1.00 1.00 0.82 0.94 1.00 2 37.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 89.2 44.5 40.0 50.7 54.7 19.7 41.1 39.6 E. D.	Lane Grp Cap (vph)	428	622		260	231	544	233	1634		729	2195	
0.98 0.49 0.03 0.12 0.14 0.19 0.21 0.14 0.19 0.28 0.42 0.25 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.4	0.09 0.49 0.02 0.14 0.14 0.15 0.14 0.15 0.14 0.15 0.14 0.15 0.14 0.15 0.14 0.15 0.14 0.15 0.15 0.14 0.10 0.15	v/s Ratio Prot	c0.13	0.09		0.02	90.0	c0.19	0.04	c0.29		0.04	0.30	
0.98	0.98	v/s Ratio Perm				0.03		0.12	0.14					
51.8 43.2 38.9 47.8 37.3 22.3 38.7 39.3 39.3 37.4 32.2 38.7 39.3 39.3 37.4 37.5 37.4 1.00 1.00 1.00 1.00 1.00 1.00 38.2 0.94 1.00 38.2 0.94 1.00 38.2 0.94 1.00 38.2 47.8 41.1 29.1 27.3 47.1 47.1 39.6 27.4 47.1 39.6 27.4 47.1 39.6 27.4 39.7 27.4	51.8 43.2 38.9 47.8 37.3 22.3 38.7 39.3 39.3 1.00 1.00 1.00 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0.82 0.94 1.00 0	v/c Ratio	0.98	0.49		0.25	0.45	0.89	0.44	06.0		0.21	0.68	
1.00 1.00 1.00 1.00 0.82 0.94 1.00 2 37.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 89.2 4.4 5 4.0 5.0.7 54.7 19.7 4.1 39.6 F D D D D B D D D F 66.5 5 52.7 39.7 No. Capacity ratio 0.91 1.00 Sum of lost time (s)	100 100 100 082 094 100 2 37.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 89.2 44.5 40.0 50 54.7 19.7 41.1 39.6 F 66.5 5 52.7 84.7 19.7 41.1 39.6 F 66.5 6.5 52.7 B 39.7 D B V V V V V V V V V V V V V	Uniform Delay, d1	51.8	43.2		38.9	47.8	37.3	22.3	38.7		39.3	26.7	
2 37.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 89.2 44.5 40.0 50.7 54.7 19.7 41.1 39.6 F D D D D D D D D D D D D D D D D D D	2 37.4 1.3 1.1 2.9 17.3 1.5 4.8 0.3 89.2 44.5 40.0 50.7 54.7 19.7 41.1 39.6 6.5 D D D D D D D D D D D D D D D D D D D	Progression Factor	1.00	1.00		1.00	1.00	1.00	0.82	0.94		1.00	1.00	
89.2 44.5 40.0 50.7 54.7 19.7 41.1 39.6 F 2 4.5 40.0 50.7 54.7 19.7 41.1 39.6 F 2 4.5 40.0 50.7 54.7 19.7 41.1 39.6 F 2 40.0 50.7 54.7 19.7 41.1 39.6 F 2 40.0 F 2 40	89.2 44.5 40.0 50.7 54.7 19.7 41.1 39.6 F D D D D D D D D D D D D D D D D D D	Incremental Delay, d2	37.4	1.3		1.1	2.9	17.3	1.5	4.8		0.3	1.7	
F D D D B B D D D B B D D D D B B D	F D D D B D D D D P D D D D D D D D D D D	Delay (s)	89.7	44.5		40.0	20.7	54.7	19.7	41.1		39.6	28.4	
66.5 52.7 39.7 F D D V A 28 HCM 2000 Level of Service D Capacity ratio 0.91 Sum of lost time (s) 24.0 Utilization 84.2% ICU Level of Service E 15.0 Sum of lost time (s) 24.0 Utilization 15.0 Sum of lost time (s) 24.0 15.0 Sum of lost time (s) 24.0 15.0 Sum of lost time (s) 24.0	66.5 52.7 39.7 F D D W W W W W W W W W W W W W	Level of Service	ш	Ω		Ω		Ω	Ω			Ω	O	
V D D alay 42.8 HCM 2000 Level of Service D Capacity ratio 0.91 D D In (s) 120.0 Sum of lost time (s) 24.0 Utilization 84.2% ICU Level of Service E 15 15 ICU Level of Service E	r E D D aleay 42.8 HCM 2000 Level of Service D r Capacity ratio 0.91 Sum of lost time (s) D h (s) 120.0 Sum of lost time (s) 24.0 Utilization 84.2% ICU Level of Service E 15 ICU Level of Service E	Approach Delay (s)		66.5			52.7			39.7			29.4	
42.8	42.8 HCM 2000 Level of Service conference of Service of	Approach LOS		ш			۵			۵			ပ	
blay 42.8 HCM 2000 Level of Service Capacity ratio 0.91 0.91 In (s) 120.0 Sum of lost time (s) Utilization 84.2% ICU Level of Service 15 15	elay 42.8 HCM 2000 Level of Service o Capacity ratio 0.91 0.91 in (s) 120.0 Sum of lost time (s) Utilization 84.2% ICU Level of Service 15 15	Intersection Summary												
Capacity ratio 0.91 120.0 Sum of lost time (s) 121.0 Level of Service 15.1 Lou Level of Service 15.1 Lou Level of Service 15.1 Loudout Service	0.91 120.0 Sum of lost time (s) 120.1 Sum of lost time (s) Utilization 84.2% ICU Level of Service 15	HCM 2000 Control Delay			42.8	Ī	CM 2000	Level of	Service		٥			
In (s) 120.0 Sum of lost time (s) Utilization 84.2% ICU Level of Service	th (s) 120.0 Sum of lost time (s) Utilization 84.2% ICU Level of Service 15	HCM 2000 Volume to Cap	acity ratio		0.91									
Utilization 84.2% ICU Level of Service 15	Utilization 84.2% ICU Level of Service 15	Actuated Cycle Length (s)			120.0	Ō	um of los	time (s)			24.0			
15	15	Intersection Capacity Utiliz	ation		84.2%	2	U Level	of Service	0		ш			
	c Critical Lane Group	Analysis Period (min)			15									

P:\81\24\01\0PA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

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P:\81\24\01\OPA Process\3. Analysis\01 - Synchro\FTPM.syn BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis

1: Kerr Street & Wyecroff Road

Upper Kerr Village (8124-01)

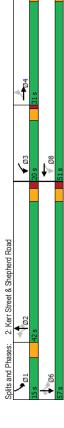
	4	>	€	←	→	*	
Movement	EBE	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	r	¥.	r	*	₩		
Traffic Volume (veh/h)	2	82	190	315	470	125	
Future Volume (Veh/h)	2	82	190	315	470	125	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	2	6	202	335	200	133	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
	1138	316	633				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
lov be:	1138	316	633				
	8.9	7.0	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	97	87	62				
cM capacity (veh/h)	156	9/9	946				
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
Volume Total	2	06	202	168	168	333	300
Volume Left	2	0	202	0	0	0	0
Volume Right	0	6	0	0	0	0	133
SSH	156	9/9	946	1700	1700	1700	1700
Volume to Capacity	0.03	0.13	0.21	0.10	0.10	0.20	0.18
Queue Length 95th (m)	8.0	3.5	6.1	0.0	0.0	0.0	0.0
Control Delay (s)	28.9	1.1	8.6	0.0	0.0	0.0	0.0
Lane LOS	۵	ш	∢				
Approach Delay (s)	12.1		3.7			0.0	
Approach LOS	В						
Intersection Summary							
Aroman Dalam	l	l	2 5	l	l	l	
Average Delay Intersection Canacity Hilization			40.8%	2	CIII aval of Sarvice	Springs	٥
Analysis Doriod (min)			15.0%	2	0	201710	•
Alialysis relida (min)			2				

With Kerr St Improvements
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Timings 2: Kerr Street & Shepherd Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

→	SBT Ø4	**	410	410	NA	6 4		9		18.0 5.0		57.0 31.0					0.0	5.2	Lag		3.5 3.0		0.0 0.0		Min None			5 0				
<i>•</i>	SBL S		06 (η pm+pt	Ψ-	2 6	-		0.7 (2 11.0		9 13.9%				0.0						0.0		None	_	_	10				
^	NBT NBR		280 70		VA Perm	2	.,	2			28.2 28.2		ñ					5.2 5.2					0.0 0.0		Ain Min			2				
ļ	WBT N		0					œ		5.0 18	22.0 28						0.0		_				0.0		None		11.0 1	0				
/	WBL	<i>y</i> -	115	115	pm+pt	က	∞	က		2.0	0.6	20.0	18.5%	16.0	3.0	1.0	0.0	4.0	Lead	Yes	3.0	3.0	0.0	0.0	None							
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Lenath: 108	Actuated Cycle Length: 45.6	Natural Cycle: 75



With Kerr St Improvements

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Queues Future Total AM (Phase 1)
2: Kerr Street & Shepherd Road Upper (8124-01)

2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
	•	ţ	←	*	٠	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	126	236	308	11	66	451	
v/c Ratio	0.40	0.34	0.21	0.11	0.14	0.21	
Control Delay	21.8	6.	10.0	2.8	3.9	4.4	
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.1	
Total Delay	21.8	1.3	10.0	2.8	4.7	4.5	
Queue Length 50th (m)	9.3	0.0	8.5	0.0	2.4	6.7	
Queue Length 95th (m)	23.0	0.0	16.3	4.9	8.9	13.4	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	603	1513	2818	1218	780	3465	
Starvation Cap Reductn	0	0	0	0	473	1599	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reducth	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.16	0.11	90:0	0.32	0.24	
Information Commons							

With Kerr St Improvements

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HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

Movement EB1 EB1 EB1 MB1		^	t	<u> </u>	-	Ļ	4	•	←	•	۶	→	*
1900 1900	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
100 115 0 215 0 280 70 90 410 100 100 115 0 215 0 280 70 90 410 100 100 1900 1900 1900 1900 1900 1900 100 100 100 100 1900 1900 1900 1900 100 100 0.97 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.	Lane Configurations	je.	£		r	2		r	**	¥C.	F	*	•
1900 1900	Traffic Volume (vph)	0	0	0	115	0	215	0	280	02	06	410	
1900 1900	Future Volume (vph)	0	0	0	115	0	215	0	280	70	90	410	
4,0 4,0 5,2 5,2 4,0 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,97 1,00 0,98 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
1.00 0.97 1.00 0.97 1.00	Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
100 100	Frpb, ped/bikes				1.00	0.97			1.00	0.97	1.00	1.00	
1.00	Flpb, ped/bikes				1.00	1.00			1.00	1.00	1.00	1:00	
100 100	ž				1.00	0.85			0.1	0.85	0.1	9:	
1964 1959 3497 1499 1785 3615 1787 1785	Fit Protected				0.95	1.00			1.00	1.00	0.95	1.00	
1274 1559 150 15	Satd. Flow (prot)				1664	1559			3497	1499	1/85	3505	
0.91 0.91	Satd Flow (norm)				1274	1559			3497	1499	879	3505	
0 0 0 126 0 306 77 99 451 0 0 0 126 58 0 308 77 99 451 0 0 0 126 58 0 0 308 77 99 451 0 0 0 126 58 0 0 308 77 99 451 0 0 0 0 126 58 0 0 308 37 99 451 0 0 0 0 2 0 0 2 0 0 308 38 941 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor. PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
0 0 0 178 0 0 0 47 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adi. Flow (vph)	0	0	0	126	0	236	0	308	77	66	451	
0 0 0 126 58 0 0 308 30 99 451	RTOR Reduction (vph)	0	0	0	0	178	0	0	0	47	0	0	S
0 % 5 7	Lane Group Flow (vph)	0	0	0	126	28	0	0	308	30	66	451	
6 0% 0% 0% 0% 2% 5% 1% 3% 1 0	Confl. Peds. (#/hr)	2		2	2		2			2	2		
Name	Heavy Vehicles (%)	%0	%0	%0	%8	%0	%0	%0	2%	2%	1%	3%	%
Married NA Perm NA Perm pm+pt NA Na	Bus Blockages (#/hr)	0	0	0	0	2	0	0	9	0	0	0	
4 8 2 2 6 12.4 12.4 12.4 19.4 19.4 19.4 12.4 12.4 12.4 19.4 19.4 28.7 12.4 12.4 12.4 19.4 19.4 28.7 12.5 0.25 0.25 0.39 0.37 3.0 3.0 3.0 3.5 3.5 3.5 3.0 3.0 3.0 3.5 3.5 3.5 3.0 3.0 3.0 3.5 3.5 3.5 3.0 3.0 3.0 0.02 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Turn Type	Perm			pm+pt	≨		Perm	≨	Perm	pm+pt	ΑN	Реш
12.4 12.4 12.4 19.4	Protected Phases		4		က	00			2		_	9	
12.4 12.4 19.4 19.4 28.7 12.4 12.4 12.4 19.4 28.7 12.4 12.4 19.4 19.4 28.7 12.4 12.4 19.4 19.4 28.7 12.5 12.5 12.5 13.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Permitted Phases	4			∞			2		7	ဖ		ω
12.4 12.4 19.4 19.4 28.7 10.25 0.25 0.25 0.39 0.39 0.57 1.25 1.25 1.25 1.35 1.35 1.35 1.35 1.35 1.35 1.35 1.3	Actuated Green, G (s)				12.4	12.4			19.4	19.4	28.7	28.7	
0.00	Effective Green, g (s)				12.4	12.4			19.4	19.4	28.7	28.7	
4.0 4.0 5.2 5.2 4.0 3.0 3.0 3.5 3.5 2.5 3.0 3.0 3.5 3.5 3.5 2.5 0.05 0.04 0.09 0.02 0.04 0.04 0.02 0.04 0.0 1.0 1.0 1.0 1.0 1.0 1.0 0.1 1.0 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 0.1 1.0 1.0 1.0	Actuated g/C Ratio				0.25	0.25			0.39	0.39	0.57	0.57	
3.0 3.0 3.0 3.5 3.5 2.5 3.7 384 1348 578 597 7000 0.00	Clearance Time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
367 384 1348 578 597 70 000 000 000 000 000 000 000 000 00	Vehide Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
C005 0.04 0.09 0.09 0.00 0.00 0.00 0.00 0.00	Lane Grp Cap (vph)				367	384			1348	218	265	1999	
C004 0.34 0.15 0.02 0.08 0.34 0.15 0.17 0.17 0.17 0.10 0.10 0.10 0.10 0.10	v/s Ratio Prot				c0.05	0.04			60.0		0.02	00.13	
10.34 0.15 0.23 0.05 0.17 15.5 14.8 10.4 0.2 0.05 0.17 15.0 1.00 0.0 0.0 0.0 0.1 0.0 0.0 0.0 0.0	v/s Ratio Perm				c0.04					0.02	0.08		
10.5 14.8 10.4 9.7 5.1 1.0 1.00 1.00 1.00 1.00 1.00 0.0 0.1 0.	v/c Ratio				0.34	0.15			0.23	0.05	0.17	0.23	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Unitorm Delay, d1				15.5	14.8			10.4	9.7	5.7	5.3	
160 150 10.1 0.0 0.1 0.1	Progression Factor				0.0	0.0			00.1	00.1	3.5	3.5	
9.6 HCM 2000 Level of Service A 6.03 Sum of lost time (s) 6.0% ICU Level of Service B	Incremental Delay, 02				0.0	0.Z			0.7	0.0	- C	- N	
0.0 B B B B B B B B B B B B B B B B B B	Delay (s)				0.0	0.0			0.0		2.6	5.4	
9.6 HCM 2000 Level of Service A 5.3 Sum of lost time (s) 6.0% ICU Level of Service B 17.2 56.0% ICU Level of Service B 15.15	Level of Service				m	m			m :	∢	∢	∢ ;	
9.6 HCM 2000 Level of Service A 0.32 Sum of lost time (s) 17.2 56.0% ICU Level of Service B 15	Approach Delay (s)		0.0			15.4			10.4			5.4	
9.6 HCM 2000 Level of Service 0.32 Sum of lost time (s) 56.0% ICU Level of Service 15	Approach LOS		V			Ω			Ω			⋖	
9.6 HCM 2000 Level of Service 0.32 Sum of lost time (s) 56.0% ICU Level of Service 15	Intersection Summary												
0.32 50.3 Sum of lost time (s) 56.0% ICU Level of Service 15	HCM 2000 Control Delay			9.6	H	3M 2000	Level of 5	Service		A			
50.3 Sum of lost time (s) zation 56.0% ICU Level of Service 15	HCM 2000 Volume to Capar	city ratio		0.32									
ilization 50,0% ICU Level of Service 15	Actuated Cycle Length (s)			50.3	ഗ	ım of lost	time (s)			17.2			
	Intersection Capacity Utiliza	IIOII		20.0%	2	n Level C	or service			מ			
	Analysis Period (min)			Ω									

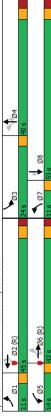
With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	*	-	ţ	4	•	—	*	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	‡	¥C	<i>y</i> -	‡	¥C	<i>y-</i>		*	F	*	*
Traffic Volume (vph)	2	735	92	195	260	165	105	115	370	325	145	95
Future Volume (vph)	20	735	92	195	260	165	105		370	325	145	95
Turn Type	pm+pt	A	Perm	pm+pt	ΑN	Perm	pm+pt		Perm	Prot	₹	Perm
Protected Phases	~	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Detector Phase	~	9	9	2	2	2	7	4	4	က	∞	00
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Total Split (s)	11.0	45.0	45.0	14.0	45.0	45.0	11.0	40.0	40.0	24.0	53.0	53.0
Total Split (%)	9.2%	35.0%	35.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7	33.7	21.0	46.7	46.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		15	15		32	32		32	35
Intersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Offset 43 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Kerr Street & Speers Road



Synchro 11 Report Page 5 With Kerr St Improvements BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

Lane Group EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL Lane Group Flow (vph) 81 855 110 227 651 192 132 134 430 378 Control Delay 16.1 3.39 5.0 30 0.5 0.75 0.46 0.29 0.30 0.91 0.0		1	†	1	-	ţ	4	•	←	•	۶	→	*
81 855 110 227 651 192 122 134 430 0.22 0.75 0.20 0.75 0.46 0.26 0.29 0.30 0.91 0.21 0.75 0.20 0.75 0.46 0.26 0.29 0.30 0.91 0.01 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.22 0.75 0.20 0.75 0.46 0.26 0.29 0.30 0.31 16.1 33.9 5.0 38.0 29.7 5.0 21.0 37.5 496 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Lane Group Flow (vph)	84	855	110	227	651	192	122	134	430	378	169	19
16.1 33.9 5.0 38.0 29.7 5.0 21.0 37.5 49.6 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	v/c Ratio	0.22	0.75	0.20	0.75	0.46	0.26	0.29	0.30	0.91	92.0	0.28	0.19
16.1 33.9 5.0 38.0 29.7 5.0 210 37.5 49.6 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10	Control Delay	16.1	33.9	2.0	38.0	29.7	2.0	21.0	37.5	49.6	59.2	29.5	5.7
161 339 50 380 297 50 210 375 496 10 168 1029 1.6 31.7 63.2 0.0 158 249 6110 1150 1230 6.4 #681 80.8 136 241 39.1 #970 1150 1230 6.4 #681 80.8 136 241 39.1 #970 1150 1150 1150 1150 1150 1150 1150 11	Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
(a) 6.8 102.9 1.6 31.7 63.2 0.0 15.8 24.9 61.0 15.0 123.0 6.4 #681 80.8 13.6 24.1 39.1 #97.0 145.3 145.3 144.4 100.5 50.0 15.8 13.4 #97.0 100.5 50.0 100.5	Total Delay	16.1	33.9	2.0	38.0	29.7	2.0	21.0	37.5	49.6	59.2	29.5	2.7
) 150 1230 64 #68.1 80.8 13.6 24.1 39.1 #97.0 145.3 105.0 145.3 105.0 144.4 100.0 50.0 103.4 103.4 105.0 145	Queue Length 50th (m)	8.9	102.9	1.6	31.7	63.2	0.0	15.8	24.9	61.0	44.3	28.0	0
105.0 145.3 174.4 100.0 50.0 103.4 15.0 175.0 75.0 75.0 175.	Queue Length 95th (m)	15.0	123.0	6.4	#68.1	80.8	13.6	24.1	39.1	#97.0	56.1	40.3	9.7
105.0 75.0 75.0 100.0 50.0 45.0 105.0 37.7 1145 561 303 1410 726 419 519 524 10 10 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Internal Link Dist (m)		145.3			474.4			103.4			143.2	
377 1145 561 303 1410 726 419 519 524 th 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0.21 0.75 0.20 0.75 0.46 0.26 0.29 0.26 0.82	Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
th 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	377	1145	261	303	1410	726	419	519	524	583	718	655
0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	_
0.21 0.75 0.20 0.75 0.46 0.26 0.29 0.26 0.82	Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
	Reduced v/c Ratio	0.21	0.75	0.20	0.75	0.46	0.26	0.29	0.26	0.82	0.65	0.24	0.17

Intersection Summary

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

Queue shown is maximum after two cycles.

With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

Movement -ane Configurations Traffic Volume (vph)	i											
ane Configurations Traffic Volume (vph)	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Fraffic Volume (vph)	*	‡	¥.	r	*	¥.	F	*	¥.	K.	*	*
	2	735	92	195	260	165	105	115	370	325	145	95
uture Volume (vph)	20	735	92	195	260	165	105	115	370	325	145	95
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Fotal Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
ane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	0.97	1.00	1.00
rpb, ped/bikes	1.00	1.00	0.95	1:00	1.00	96.0	1.00	1.00	0.93	1.00	1.00	0.95
-lpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	1.00	1.00	1.00
į.	1.00	1.00	0.85	1:00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
-It Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1799	3378	1437	1687	3438	1495	1674	1844	1429	3335	1845	1511
-It Permitted	0.37	1.00	1.00	0.15	1.00	1.00	0.65	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	710	3378	1437	271	3438	1495	1146	1844	1429	3335	1845	1511
Peak-hour factor, PHF	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	98.0	0.86
Adj. Flow (vph)	8	822	110	227	651	192	122	134	430	378	169	110
REDICTION (vph)	0	0	23	0	0	114	0	0	129	0	0	74
ane Group Flow (vph)	8	822	37	227	651	78	122	134	301	378	169	36
Confl. Peds. (#/hr)	15		9	9		15	20		32	32		20
Heavy Vehicles (%)	%0	%9	%/	%	2%	4%	%9	%	2%	2%	3%	2%
3us Blockages (#/hr)	0	4	0	0	0	0	0	2	0	0	0	0
urn Type	pm+pt	ΑN	Perm	pm+pt	Ν	Perm	pm+pt	Ν	Perm	Prot	¥	Perm
Protected Phases	-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Actuated Green, G (s)	46.9	40.7	40.7	27.8	48.6	48.6	36.9	29.1	29.1	17.9	39.5	39.2
Effective Green, g (s)	46.9	40.7	40.7	27.8	48.6	48.6	36.9	29.1	29.1	17.9	39.5	39.2
Actuated g/C Ratio	0.39	0.34	0.34	0.48	0.41	0.41	0.31	0.24	0.24	0.15	0.33	0.33
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
/ehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	2.5	2.5	4.0	4.0	2.5	4.0	4.0
ane Grp Cap (vph)	333	1145	487	596	1392	902	386	44	346	497	602	493
//s Ratio Prot	0.01	0.25	0	60.03	0.19	i c	0.02	0.07	3	c0.11	0.09	0
//s Kato Perm	0.08	1	0.03	00.28	1	0.05	0.08	0	c0.21	1	0	0.02
//c Katio	0.24	0.75	0.08	0.7	0.47	0.13	0.32	0.30	0.87	0.76	0.28	0.07
Juliorm Delay, d'I	23.4	35.1	20.9	4.22	707	4.77	31.0	3/.	43.6	49.0	29.9	27.9
Togression radio	0.00	0.00	0.70	8.5	3. 4	3.5	3.5	8.5	0.0	00.1	0.0	00.
ndernenai Delay, uz	0.0	0.4	0.0	0.0	- 6	4. 0	S. 5	0.0	0.12	0. 1	S. S.	- 6
Jelay (s)	9.0	32.4	C.U.S	23.52	S. 12	0.77	4. C	٥. /٥	÷. r	0.00 C. T	5.0c	70.07
Level of Service	מ	ر د د	ر	ر) a	ر	د	72 Y	П	ш) -	٥
Approach Delay (s)		- 00			0.12			 			‡ 6	
approacti LOS		د			ر			ב			ם	
ntersection Summary												
HCM 2000 Control Delay			36.7	¥	HCM 2000 Level of Service	Level of	Service		۵			
HCM 2000 Volume to Capacity ratio	ty ratio		0.81									
Actuated Cycle Length (s)			120.0	S	Sum of lost time (s)	time (s)			18.2			
ntersection Capacity Utilization	no		72.4%	⊇	ICU Level of Service	f Service			O			
Analysis Period (min)			15									

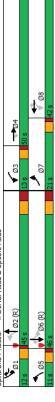
Synchro 11 Report Page 7 With Kerr St Improvements BA Group - EFS

Timings 4: Dorval Road & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	1	†	*	-	ţ	4	•	←	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	<u> </u>	₩	R _	F	₩	¥C	<u>r</u>	4₽	y -	₩	W _	
Traffic Volume (vph)	415	280	40	75	330	285	20	830	275	525	255	
Future Volume (vph)	415	280	40	75	390	285	70	830	275	525	255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	¥	hm+ov	pm+pt	≨	pm+pt	Ϋ́	Perm	
Protected Phases	7	4		က	∞	-	2	2	-	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	-	2	2	-	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0	13.0	45.0	12.0	11.0	45.0	12.0	46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	10.0%	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0	8.0	7.0	38.0	8.0	39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	S-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB	TL, Start o	of Green							
Natural Cycle: 125												
Control Type: Actuated-Coordinated	dinated											

4: Dorval Road & Speers Road Splits and Phases:



With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kerr Village (8124-01) Queues 4: Dorval Road & Speers Road

0.36 3.1 3.1 10.1 761 277 0.38 571 0.38 10.5 0.0 10.5 35.4 45.6 45.6 299 0.93 60.9 0.0 60.9 30.4 #141.0 0.93 321 1043 0.94 55.5 0.0 55.5 123.9 #165.4 0.94 1111 76 0.19 17.8 0.0 17.8 8.3 19.6 393 310 0.49 9.9 0.0 9.9 34.2 55.0 639 0.49 424 0.64 35.9 0.0 35.9 35.9 35.9 42.6 42.6 MBL 82 0.31 17.2 0.0 0.0 17.2 5.2 7.8 85.0 276 0 0 0 0 0 60.0 600 0 0 0 0 0 0.08 0.3 0.0 0.0 0.0 630 0.64 40.1 0.0 40.1 71.4 79.0 412.3 0.53 1192 451 0.94 79.4 0.0 79.4 54.8 #85.1 0 0 0 0 46:0 60.0 ve Ratio
Contro Delay
Contro Delay
Cueue Bergth 50th (m)
Cueue Length 95th (m)
Innemal Link Dist (m)
Turn Bay Length (m)
Base Capacity (vph)
Starvation Cap Reductn
Spillack Cap Reductn
Storage Cap Reductn
Storage Cap Reductn
Reduced vic Ratio Lane Group Flow (vph)

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With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	4	†	1	>	ţ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	\$	*-	r	\$	*-	<u>, </u>	₩.		<u>, </u>	‡	*-
Traffic Volume (vph)	415	280	40	75	330	285	02	830	130	275	525	255
Future Volume (vph)	415	280	40	75	330	285	2	830	130	275	525	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost Unite (s)	0.4.0	0.7	5.5	0.4	0.7	0.4	5.5	0.7		0.4	0.7	5.5
Frob. ped/bikes	1.00	100	100	100	100	66.0	100	1.00		100	1.00	98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
T.	1.00	1.00	0.85	1.00	1.00	0.85	1.00	96.0		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1785	3477		1687	3539	1417
Flt Permitted	0.95	1.00	1.00	0.38	1.00	1.00	0.44	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3400	3329	1482	099	3256	1494	822	3477		172	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	630	43	82	424	310	9/	905	141	588	571	277
RTOR Reduction (vph)	0	0	30	0	0	69	0	10	0	0	0	163
Lane Group Flow (vph)	451	630	13	82	424	241	9/	1033	0	299	571	114
Confl. Peds. (#/hr)	2					2	2					5
Heavy Vehides (%)	3%	%8	%6	%6	10%	%2	1%	2%	%0	%2	2%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	ΑA	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	NA	Perm
Protected Phases	7	4		က	∞	_	2	2		_	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.0	35.4	35.4	32.4	25.4	43.8	43.4	37.2		9.69	49.4	49.4
Effective Green, g (s)	17.0	35.4	35.4	32.4	25.4	43.8	43.4	37.2		29.6	49.4	49.4
Actuated g/C Ratio	0.14	0.29	0.29	0.27	0.21	0.36	0.36	0.31		0.50	0.41	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	481	982	437	236	689	545	347	1077		317	1456	583
	c0.13	c0.19		0.02	0.13	0.07	0.01	0.30		00.14	0.16	
v/s Ratio Perm			0.01	0.02		0.09	0.07			00.32		0.08
v/c Ratio	0.94	0.64	0.03	0.35	0.62	0.44	0.22	96.0		0.94	0.39	0.20
Uniform Delay, d1	51.0	36.8	30.1	33.7	42.9	28.8	25.5	40.6		35.7	24.8	22.6
Progression Factor	00.1	00.1	1.00	0.67	0.74	0.46	1.00	1.00		0.97	0.39	0.61
Incremental Delay, d2	70.0	2.0	0.7	D. C.	2.3	0.0	0.3	5.00		29.5	0.0	0.0
Delay (s)	6.0	0.00	ج ا	C.C2	5. 5. 6.	0.0	60.7	03.0		04.0	- 1	
Level of Service	ш	۵	ပ	ပ	ပ	ш	ပ	ш		ш	മ	ш
Approach Delay (s)		53.7			25.2			57.5			25.2	
Approach LOS		Ω			O			ш			O	
Intersection Summary												
HCM 2000 Control Delay			41.4] 	3M 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	ratio		0.90									
Actuated Cycle Length (s)			120.0	Su	m of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization			86.1%	೦	U Level	ICU Level of Service			ш			
Analysis Period (min)			12									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

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

Timings Future Total AM (Phase 1) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

5: St. Augustine Drive & Speers Road	ive & S	seers l	Road		Upper h	Upper Kerr Village (8124-01)
	1	†	ţ	•		
Lane Group	EBL	EBT	WBT	NBR	90	
Lane Configurations	*	₩.	₩.	*		
Traffic Volume (vph)	2	870	785	50		
Future Volume (vph)	2	870	785	20		
Turn Type	Perm	Ϋ́	ΑN	Perm		
Protected Phases		4	∞		9	
Permitted Phases	4			2		
Detector Phase	4	4	∞	2		
Switch Phase						
Minimum Initial (s)	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	
Total Split (s)	82.0	82.0	82.0	38.0	38.0	
Total Split (%)	68.3%	%8.3%	68.3%	31.7%	32%	
Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	
Lost Time Adjust (s)	0:0	0.0	0.0	0.0		
Total Lost Time (s)	5.9	5.9	5.9	6.3		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	C-Min	C-Min	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	
Intersection Summary						
Cycle Length: 120						
Actuated Cycle Length: 120						
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	ed to phase	4:EBTL	and 8:WB	T, Start of	f Green	
Natural Cycle: 50	Layer Hand					
Control I ype: Actuated-Coordinated	rdinated					

Splits and Phases: 5: St. Augustine Drive & Speers Road



With Kerr St Improvements

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BA Group - EFS

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Queues 5: St. Augustine Drive & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

•	NBR	23	0.11	1.	0.0	1.	0.0	0.0			514	0	0	0	0.04		
Ļ	WBT	606	0.29	4.5	0.0	4.5	48.0	55.4	42.5		3122	0	0	0	0.29		
Ť	EBT	1006	0.32	1.4	0.0	1.4	16.4	m20.3	472.1		3124	0	0	0	0.32		
1	EBF	9	0.01	1.6	0.0	1.6	0.2	m0.3		20.0	542	0	0	0	0.01		
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Interception Summary	Meliconomical y

With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

With Kerr St Improvements BA Group - EFS

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Timings 6: Speers

Future Total AM (Phase 1)	Upper Kerr Village (8124-01)	
Timings	6: Speers Road/Cornwall Road & Cross Avenue	

*	SBR	14.14	245	245	Perm		4	4		10.0	15.8	31.0	22.1%	25.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							f Green		
•	SBL	F	വ	2	Prot	4		4		10.0	15.8	31.0	22.1%	25.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							T, Start o		
,	WBT	4₽	902	902	Ϋ́	9		9		38.0	47.6	74.0	25.9%	67.4	3.7	5.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				and 6:WB		
Ť	EBT	₩	1220	1220	Ν	2		2		38.0	47.6	109.0	%6.77	102.4	3.7	2.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				2:EBTL a		
١	EBL	<i>y</i> -	205	202	pm+pt	2	2	2		0.9	12.0	35.0	25.0%	29.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None							d to phase		dinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1)	Upper Kerr Village (8124-01)
Queues	6: Speers Road/Cornwall Road & Cross Avenue

6: Speers Road/Cornwall Road & Cross Avenue	ornwall F	Road &	Cross	Aven	je.	Upper Kerr Village (8124-01)
	1	t	ţ	ၨ	•	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1435	736	9	288	
v/c Ratio	0.42	0.49	0.29	0.05	0.63	
Control Delay	4.3	3.9	7.2	9.09	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.3	3.9	7.2	9.09	12.9	
Queue Length 50th (m)	9.4	44.7	33.1	1.6	0.0	
Queue Length 95th (m)	14.5	53.4	43.1	2.7	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	729	2905	2501	324	202	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.49	0.29	0.02	0.41	
Interception Summary						

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HCM Signalized 6: Speers Road

Future Total AM (Phase 1)	Upper Kerr Village (8124-01)	
ized Intersection Capacity Analysis	oad/Cornwall Road & Cross Avenue	

eBb EBT attributes of the control of	MBT WBR 6655 20 6655 20 665 20 665 100 666 67 67 67 67 67 67 67 67 67 67 67 67	SBL 5 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00	SBR 1900 5.8 0.88 1.00 0.85 1.00 0.85 267 21 29% Perm	
ns	0	5 5 1900 5 5 8 1900 1 10	245 245 245 245 245 608 008 008 100 008 260 267 21 21 21 21 21 21 21 21 21 21 21 21 21	
(vph) 205 1220 100 1900 100 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 1.00 1.00 1.0	6	1900 1000 1.00 1.00 1.00 1.00 1.00 1.00	245 245 245 58 5.8 6.8 1.00 6.85 1.00 6.85 1.00 6.85 2.28 2.88 2.87 2.1 2.1 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	
(vph) 205 1220 100 1900 100 0.95 1.00 1.00 1.00 1.0	6	1900 5.8 1.00 1.00 1.00 1.00 0.95 1805 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.	245 1900 5.8 0.88 1.100 0.85 1.100 0.85 22608 22608 22608 24 27 21 24 24 24 26 26 26 26 26 26 26 26 26 26 26 26 26	
1900 1900 1900 1900 1900 1900 1900 1900	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1900 5.8 1.00 1.00 1.00 1.95 1805 0.95 0.95 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.8	1900 5.8 0.88 1.100 0.85 1.100 2208 267 21 21 24 24 267 24 27 24 39%	
(vph) 24 1475 (vph) 25 (s) 1472 1435 (s) 1472 1472 1473 (s) 1472 1472 1473 (s) 1472 1473 (s) 1472 1473 (s) 1	300	5.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	5.8 1.00 1.00 0.85 1.00 2608 267 21 21 24 4 4	
1,00 0,95 1,00 1	30	1.00 1.00 1.00 1.00 0.95 1805 0.85 6 6 6 6 7 7 8 100 100 100 100 100 100 100 100 100 1	0.88 1.00 0.85 1.100 0.85 2608 2608 288 267 21 21 4 4	
(vph) 241 172 172 1 172 1 172 1 172 1 172 1 172 1 172 1 172 1 172 1 172 1 173 1 100	9.0	1.00 1.00 0.95 1805 0.95 0.95 0.85 0 6 6 6 6 6 4 4 4 4	100 100 0.85 100 22608 2608 267 21 21 39% 9%	
(vph) 241 1435 (vph) 261 172 172 172 172 172 172 172 172 172 17	5.	1.00 0.95 1805 0.85 0.85 0.85 0.85 0.85 0.85 4 4 4	100 0.85 1.00 6608 6608 0.85 2.267 2.1 2.1 3.4 4 4	
(vph) 576 (s) 60 (6) 60	5.0	1,00 0,95 1,805 0,85 0,85 6 6 0 0 0 0 4 4 4	0.85 1.00 2608 1.00 0.85 288 267 21 21 4 4	
(vph) 241 172 172 (vph) 241 172 172 173 173 173 173 173 173 173 173 173 173	9.0	0.95 1805 1805 0.85 0 6 6 6 6 7 Prot 10.4	100 2608 2608 2608 0.85 288 267 21 9% 9m	
(vph) 247 1435 (vph) 247 1435 (vph) 241 1435 (vph)	30	1805 0.95 1805 0.85 0 0 0 6 0 0 6 4 Prot	2608 2608 267 267 21 39% 9%	
(vph) 241 100 100 100 100 100 100 100 100 100 1	9.0	0.95 1805 0.85 0 0 0 0 0 0 6 6 4 Prot	100 2608 2085 267 21 9% erm	
(vph) 241 1435 (vph)	5.	0.85 0.85 0 0 0 0 0 6 6 6 7 10.4	2008 2088 267 21 9% em 4	
0.85 0.85 241 1435 0 0 0 241 1435 5 7% 4% Pm+pt NA 1172 1172 1172 1172 1172 1172 0.84 0.84 6.0 6.6 6.0 6.6 3.5 5.0	55	0.85 6 0 0 0 0 0 6 6 6 4 4 4	0.885 2888 267 21 9% Perm 4 4	
241 1435 0 0 0 0 0 0 241 1435 5 5 4% pm+pt NA 5 2 1172 117.2 1172 117.2 1172 117.2 0.84 0.84 6.0 6.6 6.0 6.6 6.0 6.6 6.0 6.6	ις.	6 0 0 0 0 0 0 0 0 4 4 4	288 267 21 9% 9% 9 4 4	
241 1435 5 5 4% 7% 4% 77% 4% 5 2 2 2 1172 117.2 1172 117.2 0.84 0.84 6 0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	ιΩ	0 0 6 Prot 4 4 10.4	267 21 9% Perm 10.4	
) 241 1435 5 7% 4% pm+pt NA 5 2 2 1172 1172 1172 1172 084 084 60 6.6 60 6.6 576 2995	r.	0 0% Prot 4 4	21 9% Perm 4 4	
5 4% pm+pt NA 5 2 2 2 2 1172 1172 1172 1172 1172 1172	Ω	0% Prot 4 4	9% Perm 4 4	
7% 4% pm+pt NA 5 2 2 2 2 1172 1172 1172 1172 1172 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84		9% Prot 4 4 4 4 10.4	9% Perm 4 4	
mm+pt NA 5 2 2 2 1172 1172 1172 1172 0.84 0.84 6.0 6.6 6.0 6.6 5.0 5.0	NA 6 1.5	Prot 4	Jerm 4 10 <i>A</i>	
5 2 2 2 1172 1172 1172 1172 1172 1172 11	9 2:	4 4 10.4	4	
2 117.2 117.2 117.2 117.2 0.84 0.84 6.0 6.6 3.5 5.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	1.5	10.4	10.4	
117.2 117.2	1.5	10.4	10.4	
117.2 117.2 11 0.84 0.84 0 6.0 6.6 3.5 5.0 576 2.905 2			t:0	
0.84 0.84 (6.0 6.6 6.0 3.5 5.0 7.0 576 2905 2	1.5	10.4	10.4	
le (s) 6.0 6.6 sion (s) 3.5 5.0 (vph) 576 2905 2	.72	0.07	0.07	
sion (s) 3.5 5.0 (vph) 576 2905 2	9.9	2.8	5.8	
(vph) 576 2905	5.0	3.0	3.0	
FF 00 CO C	50.1	134	193	
0.03 c0.41	0.21			
			c0.01	
0.42 0.49 0	.29	0.04	0.11	
2.7 3.2	6.7	60.2	60.5	
1.00 1.00	1.00	1.00	1.00	
Incremental Delay, d2 0.6 0.6 0.3	0.3	0.1	0.3	
3.3 3.8	7.0	60.3	2.09	
A	⋖	ш	ш	
y (s) 3.7	7.0	2.09		
∢	Α	ш		
Intersection Summary				
lay	10.8 HC	CM 2000 L	HCM 2000 Level of Service	В
pacity ratio				
Actuated Cycle Length (s) 140.0		Sum of lost time (s)		18.4
Intersection Capacity Utilization 69.2%		ICU Level of Service	Service	O
Analysis Period (min)	15			

With Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 1) 7: Kerr Street & Prince Charles Drive

	4	†	<i>></i>	\	ļ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	2	0	2	2	0	4	2	545	2	40	380	5
Future Volume (Veh/h)	2	0	2	2	0	40	2	545	2	40	380	2
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	9	0	9	9	0	48	9	649	9	48	452	9
Pedestrians		15			9							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		[-			[
Percent Blockage		~			က							
Right tum flare (veh)												
Median type								None			None	
Median storage veh)												
Jpstream signal (m)								238			127	
oX, platoon unblocked	0.91	0.91	0.85	0.91	0.91	0.87	0.85			0.87		
vC, conflicting volume	1278	1263	470	1251	1263	682	473			685		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
/Cu, unblocked vol	949	933	291	920	933	292	295			268		
IC, single (s)	7.1	6.5	6.5	7.1	6.5	6.3	4.3			4.2		
;, 2 stage (s)												
F (s)	3.5	4.0	3.6	3.5	4.0	3.4	2.3			2.3		
on due ue free %	97	100	66	97	100	8	66			94		
cM capacity (veh/h)	179	221	572	506	221	434	1001			833		
Direction, Lane #	EB 1	WB1	NB 1	SB 1								
Volume Total	12	25	199	909								
Volume Left	9	9	9	48								
Volume Right	9	48	9	9								
SSH	273	386	1001	833								
Volume to Capacity	0.04	0.14	0.01	90:0								
Queue Length 95th (m)	1.0	3.7	0.1	1.4								
Control Delay (s)	18.8	15.8	0.2	1.6								
Lane LOS	ပ	O	∢	∢								
Approach Delay (s)	18.8	15.8	0.2	1.6								
oproach LOS	O	O										
ntersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization	_		57.1%	⊇	ICU Level of Service	f Service			ш			
Analysis Period (min)			15									

With Kerr St Improvements

Synchro 11 Report

BA Group - EFS

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

																																								A	
•	SBR		30	30			0.85	32																																f Service	
→	SBT	2	320	320	Free	%0	0.85	412						None		262																								ICU Level of Service	
—	NBT	4	525	525	Free	%0	0.85	618	2	3.6	[-	0		None		103																								2	
€	NBL		5	2			0.85	9									0.93	467			387	4.1		2.2	66	1078	SB 1	447	0	32	1700	0.26	0.0	0.0		0.0			9.0	43.2%	15
1	EBR		10	10			0.85	12									0.93	454			374	6.2		33.3	86	614	NB 1	624	9	0	1078	0.01	0.1	0.2	∢	0.2					
1	EBF	>	-8	20	Stop	%0	0.85	24	20	3.6	1.1	2					0.89	1080			846	6.4	,	3.5	92	291	EB 1	36	24	12	353	0.10	2.6	16.4	O	16.4	ပ			ization	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	(S)	bo dnene tree %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

With Kerr St Improvements BA Group - EFS

Timings
Future Total AM (Phase 1)
9: Kerr Street & Stewart Street
Upper Kerr Village (8124-01)

→	SBL SBT	4	40 280		pm+pt NA	1 6	9	9		6.0 24.0	10.0 32.0	10.0 45.0		7.0 39.6			0.0	5.4	Lead	Yes			0.0 0.0		None C-Min	10.0	14.0	35						
←	NBT	4	420	420	Ϋ́	2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		2	2	Perm		2	7		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						Green
Ļ	WBT	4	32	32	ΑN	∞		∞	,	10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20						Start o
\	WBL		20	20	Perm		∞	œ	,	10.0	30.0	30.0									4.0	3.0	0.0	0.0	None	10.0	13.0	20						TBS:9 pt
†	EBT	4	52	52	ΝΑ	4		4		10.0	30.0	30.0	10.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20						NBTLa
1	EBL		32	32	Perm		4	4		10.0	30.0	30.0									4.0	3.0	0.0	0.0	None	10.0	13.0	50						to phase 2
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Actuated Cycle Length: 75	100000000000000000000000000000000000000	Offset: 13 (17%). Referenced to phase 2:NBTL and 6:SBTL. Start of Green

Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street & Stewart Street

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With Kerr St Improvements

Synchro 11 Report

BA Group - EFS

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Queues

Queues

9: Kerr Street & Stewart Street

Upper Kerr Village (8124-01)

	†	Ļ	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	6/	152	542	427	
v/c Ratio	0.28	0.40	0.47	0.42	
Control Delay	23.8	14.2	9.6	9.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	23.8	14.2	9.6	9.0	
Queue Length 50th (m)	9.6	8.7	24.6	18.0	
Queue Length 95th (m)	15.4	16.8	9.19	47.8	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	429	229	1156	1028	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.17	0.27	0.47	0.42	
Intersection Summary					

With Kerr St Improvements BA Group - EFS

HCM Signalized Inte 9: Kerr Street & Stev

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street	ersectic wart St	n Cap reet	acity A	ınalysi	(0			F	ure To	Future Total AM (Phase 1) Upper Kerr Village (8124-01)	I (Phas	se 1) 24-01)
	1	†	~	>	ļ	4	•	←	4	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	32	25	2	20	32	2	2	420	20	40	280	30
Future Volume (vph)	33	52	2	8	33	2	2	420	50	40	780	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4			5.4			5.4			5.4	
Lane Util. Factor		0.1			1.00			1.00			1.00	
Frpb, ped/bikes		0.5			0.97			1.00			0.99	
Flpb, ped/bikes		0.99			1:00			1.00			1.00	
14 14 14 14 14 14 14 14 14 14 14 14 14 1		0.99			0.92			0.99			0.99	
Fit Protected		1204			0.39			1.00			0.99	
Satu. Flow (prot)		020			7 0 0			0/1			07/1	
Cotd Elow (norm)		1288			1532			1760			1570	
Satur Flow (perm)		200			700			607				
Adi Elow (vob)	0.8Z	0.8Z	0.82	0.8Z	0.8Z	0.8Z	0.0Z	512	0.82	70.0	341	37
RTOR Reduction (vph)	ę c	3 10	0	- 0	2 89	3 0	0	4 -	6	2	<u> </u>	5
Lane Group Flow (vph)	0	74	0	0	8	0	0	241	0	0	424	0
Confl. Peds. (#/hr)	20		20	20		20	90		35	35		30
Heavy Vehicles (%)	5%	%/	16%	%0	2%	4%	28%	%9	%0	5%	%9	%9
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	4	0
Turn Type	Perm	Ϋ́		Perm	ΑN		Perm	Ϋ́		pm+pt	¥	
Protected Phases		4			∞			2		-	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)		15.2			15.2			49.0			49.0	
Effective Green, g (s)		15.2			15.2			49.0			49.0	
Actuated g/C Ratio		0.20			0.20			0.65			0.65	
Clearance Time (s)		5.4			5.4			5.4			5.4	
Vehicle Extension (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		784			310			1155			1025	
v/s Kato Prot		0			ı			3			0	
v/s Kato Perm		0.05			c0.05			0.31			0.27	
v/c Kato		0.20			0.27			0.47			0.41	
Uniform Delay, d1		7.27			7.97			6.5			6.2	
Progression Factor		1.00			9.5			00.1			1.00 0.0	
Incremental Delay, d2		0.7			9.0			4. 1			0.3	
Delay (s)		25.9			25.9			6.7			6.4	
Level of Service		ט פ			ט פ			4 c			∀ ₹	
Approach LOS		6.0.2			6. C			6. ⊲			† . ⊲	
אלאוסמקו בסס		>)			c			¢	
Intersection Summary												
HCM 2000 Control Delay			10.8	오	HCM 2000 Level of Service	evel of S	ervice		m			
HCM 2000 Volume to Capacity ratio	outy ratio		0.44	ć	1	(1)			9			
Actuated Cycle Length (S)	2		75.U 66.1%	გ ⊆	Sum of lost time (s)	Convice			Σ. Σ. C			
Analysis Period (min)	<u></u>		25.7	2	רבאבו ח	Calvica)			
C Critical Lane Group			2									
ביים ביים ביים ביים ביים ביים ביים ביים												

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Timings 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

→	SBT	4413	1015	1015	¥	9		9		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0								†	0.5	₩ 0/8	
۶	SBL	F	150	150	Prot	~		~		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None												4		
←	NBT	4413	1325	1325	¥	2		2		20.0	41.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0											
•	NBL	F	110	110	pm+pt	2	2	2		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0:0	0.0	None							f Green				√ Ø3	21s	*	
↓	WBT	₩	125	125	Ϋ́	∞		∞		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				T, Start o							
>	WBL	F	20	20	pm+pt	က	∞	က		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SB			ft Road				
†	EBT	₩	115	115	Ϋ́	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				2:NBTL			& Wyecro				
4	EBF	K.	215	215	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							d to phase		Jinated	10: Dorval Road & Wyecroft Road	(8)		9	3
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Splits and Phases: 10: Dor	V Ø1	42 s	◆ gs (B)	47 0

With Kerr St Improvements BA Group - EFS

Queues
10: Dorval Road & Wyecroff Road
Upper Kerr Village (8124-01)

	1	†	\	Ļ	•	—	۶	→	
Lane Group	EBF	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	234	239	22	381	120	1505	163	1581	
v/c Ratio	09:0	0.30	0.09	99.0	0.54	99.0	0.44	0.72	
Control Delay	9.99	20.8	28.6	24.4	27.9	15.9	53.6	27.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.99	20.8	28.6	24.4	27.9	15.9	53.6	27.8	
Queue Length 50th (m)	27.0	11.5	3.7	17.1	8.2	92.9	18.8	101.1	
Queue Length 95th (m)	40.0	24.1	9.1	31.3	m13.1	m128.5	28.7	140.3	
Internal Link Dist (m)		155.6		199.3		494.4		672.1	
Turn Bay Length (m)	115.0		145.0		65.0		125.0		
Base Capacity (vph)	416	931	358	1032	239	2274	382	2211	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.26	90:0	0.37	0.50	99:0	0.43	0.72	
C									
Intersection Summary									

measonate our many makes and a metered by upstream signal.

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With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	4	†	>	•	ļ	4	•	←	*	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K	4 ¢		*	₩		K	4413		K	4413	
Traffic Volume (vph)	215	115	105	20	125	225	110	1325	09	150	1015	440
Future Volume (vph)	215	115	105	20	125	225	110	1325	90	150	1015	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	9.	0.99		1:00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	0.0	
7.T	00.1	0.93		00.1	0.90		00.1	0.99		9.5		
Satd Flow (and)	3407	3066		1637	3130		1641	5034		3/33	00.1	
Elt Permitted	0.95	100		090	100		500	100		0 95	100	
Satd. Flow (perm)	3127	3066		1039	3132		138	5034		3433	4670	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	125	114	22	136	245	120	1440	92	163	1103	478
RTOR Reduction (vph)	0	87	0	0	202	0	0	က	0	0	25	0
Lane Group Flow (vph)	234	152	0	22	179	0	120	1502	0	163	1529	0
Confl. Peds. (#/hr)	2		က	က		2	~					_
Heavy Vehides (%)	15%	%/	%6	10%	2%	2%	10%	2%	1%	2%	2%	4%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
Turn Type	Prot	ΑN		pm+pt	≨		pm+pt	≨		Prot	ΑĀ	
Protected Phases	7	4		က	∞		2	2		_	9	
Permitted Phases				∞			2					
Actuated Green, G (s)	14.9	28.1		21.0	17.1		62.6	51.1		12.9	52.5	
Effective Green, g (s)	14.9	28.1		21.0	17.1		62.6	51.1		12.9	52.5	
Actuated g/C Ratio	0.12	0.23		0.18	0.14		0.52	0.43		0.11	4.0	
Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
Vellide Exterision (s)	2000	24.7		0.0	0.0		3.0	0.00		0.0	0.00	
Lane Grp Cap (vpn)	2000	- 400		000	90 00		2000	2 143		209	2045	
v/s Ratio Perm	70.00	0.03		0.00	00:00		0.03	00		0.00	66.93	
v/c Ratio	09.0	0.21		0.11	0.40		0.56	0.70		0.44	0.75	
Uniform Delay, d1	49.8	37.0		41.4	46.8		19.2	28.2		50.2	28.2	
Progression Factor	1.00	1.00		1.00	1.00		1.27	0.56		1.00	1.00	
Incremental Delay, d2	3.9	0.3		0.5	1.2		5.6	1:0		. 8.	5.6	
Delay (s)	53.6	37.3		41.9	48.0		27.0	16.6		51.9	30.8	
Level of Service	۵	□		۵	□		ပ	ш		Δ	ပ	
Approach Delay (s)		45.4			47.7			17.4			32.8	
Approach LOS		Ω						ш			O	
Intersection Summary												
HCM 2000 Control Delay			29.7	H	HCM 2000 Level of Service	evel of S	service		ပ			
HCM 2000 Volume to Capacity ratio	ty ratio		0.64									
Actuated Cycle Length (s)			120.0	S	Sum of lost time (s)	time (s)			24.0			
Intersection Capacity Utilization	on		72.8%	೦	ICU Level of Service	f Service			O			
Analysis Period (min)			15									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

HCM Unsignalized 11: Speers Road &

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

Analysis	
Capacity	nection
M Unsignalized Intersection Capacity Analysis	 Speers Road & Interim Connecti
signalized I	rs Road &
CM Ons	1: Speel

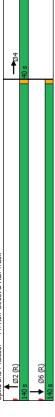
																																								₹.	
_	SBR	* _	22	22			0.92	09									0.87	416			35	6.6		3.3	ස	903	31 SB 2	49 60	49 0		437 903		2.9 1.6		В	11.5	В			vice	2
* *	SBL SE				Stop		0.92 0.										Ī		821			6.8			88		WB2 SB1	292			1700 4		0.0			=				ICU Level of Service	
1	WBR		88	20			0.92	22																			WB1	540	0	0	1700	0.32	0.0	0:0		0.0				I I I	
ţ	WBT	₩.		Ī	Pree	%	0.92	810						TWLTL TWLTL	2	169											EB3		0		1700		0.0						α ο	34 0%	2
†	BBT	‡	870	870	Pree :		0.92							TWLTL	2	99											EB2	473	0		1700		0.0								
1	EBL	F	8 8	20			0.92	22									0.87	832			513	4.1		2.2	8	927	EB 1	22	22	0	927	0.02	9.0	9.0	V	0.2				ifion	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	panno daban namanin

Synchro 11 Report Page 25 With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kerr Village (8124-01) Timings 14: Kerr Street & Rail Track

	_	+		
Lane Group	NBT	SBT	Ø4	
Lane Configurations	+	*		
Traffic Volume (vph)	495	200		
Future Volume (vph)	495	200		
Turn Type	Ϋ́	Ν		
Protected Phases	2	9	4	
Permitted Phases				
Detector Phase	2	9		
Switch Phase				
Minimum Initial (s)	2.0	5.0	2.0	
Minimum Split (s)	22.0	22.0	22.0	
Total Split (s)	140.0	140.0	40.0	
Total Split (%)	77.8%	77.8%	25%	
Maximum Green (s)	138.0	138.0	38.0	
Yellow Time (s)	2.0	2.0	2.0	
All-Red Time (s)	0.0	0.0	0.0	
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	2.0	2.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehide Extension (s)	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	
Recall Mode	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	
Intersection Summary				
Cycle Length: 180				
Actuated Cycle Length: 180				
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	o phase 2:1	VBT and 6	:SBT, St	tart of Green
Natural Cycle: 45				
Control Type: Pretimed				

Splits and Phases: 14: Kerr Street & Rail Track



With Kerr St Improvements BA Group - EFS

Queues			Future Total AM (Phase 1)
14: Kerr Street & Rail Track	Track	>	Upper Kerr Village (8124-01)
	←	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	538	543	
v/c Ratio	0.37	0.38	
Control Delay	7.7	7.8	
Queue Delay	22.0	0.0	
Total Delay	62.7	7.8	
Queue Length 50th (m)	57.3	58.5	
Queue Length 95th (m)	73.3	75.0	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1414	
Starvation Cap Reductn	896	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.14	0.38	
Intersection Summary			

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With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total AM (Phase 1)
Upper Kerr Village (8124-01)

	1	†	1	\	ļ	4	•	←	•	۶	→	•
Movement	BB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	495	0	0	200	0
Future Volume (vph)	0	0	0 0	0	0	0 0	0 0	495	0	0	200	0
Total Lost time (s)	0061	0061	1300	0061	1300	1300	1300	200	1300	0061	200	1900
Lane Util. Factor								1.00			1.00	
Ĕ								1.00			1.00	
Fit Protected								1.00			1.00	
Satd. Flow (prot)								1881			1845	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	538	0	0	543	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	538	0	0	543	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	3%	%0
Turn Type								¥			A	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1414	
v/s Ratio Prot								0.29			00.29	
v/s Ratio Perm												
v/c Ratio								0.37			0.38	
Uniform Delay, d1								6.9			6.9	
Progression Factor								1.00			1:00	
Incremental Delay, d2								0.7			0.8	
Delay (s)								9.7			7.7	
Level of Service								⋖			⋖	
Approach Delay (s)		0.0			0.0			9.7			7.7	
Approach LOS		∢			∢			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			7.7	윈	:M 2000	HCM 2000 Level of Service	ervice		Α			
HCM 2000 Volume to Capacity ratio	ity ratio		0.30									
Actuated Cycle Length (s)			180.0	Su	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	ion		29.6%	⊇	J Level o	ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

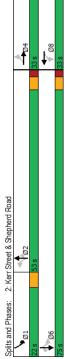
Movement EBL EBR NBL NBT SBR		1	~	√	-	_	•		
(m) 25 130 115 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 110 610 505 610 610 610 610 610 610 610 610 610 610	Movement	EBL	EBR	BE	NBT	SBT	SBR		
(h) 25 130 115 610 505 110 (h) 25 130 115 610 505 110 (h) 25 130 115 610 505 110 (h) 27 140 124 656 543 118 (h) 111 (h) 27 140 124 656 543 118 (h) 113 336 666 (h) 118 336 679 88 (h) 124 00 0 0 0 (h) 129 651 889 (h) 140 124 00 0 0 0 (h) 150 61 889 (h) 150 124 0 0 0 0 (h) 160 170 170 170 (h) 45 62 37 00 00 00 00 (h) 23 3 12 0 37 00 00 00 00 (h) 25 37 00 00 00 00 00 00 (h) 25 37 00 00 00 00 00 00 00 00 00 00 00 00 00	Lane Configurations	je.	¥.	r	*	₩			
(h) 26 130 115 610 505 110 Stop Free Free Free Conditions of the Condition of the Conditio	Traffic Volume (veh/h)	22	130	115	610	505	110		
Stop Free Free 9	Future Volume (Veh/h)	52	130	115	610	505	110		
0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0	Sign Control	Stop			Free	Free			
1) 27 140 124 656 543 118 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Grade	%0			%	%0			
3.6	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
3.6 1.1 1.1 None None None None	Hourly flow rate (vph)	27	140	124	929	543	148		
3.6 1.1 None None None od 1183 336 666 ed 1183 336 666 1.8 7.0 42 3.5 3.3 2.3 8.8 7.0 42 2.7 140 124 0 0 0 0 0 118 2.7 140 124 0 0 0 0 0 118 1.5 6.2 3.7 0 0.0 0.0 0.0 1.5 6.2 3.7 0 0.0 0.0 0.0 1.5 6.2 3.7 0 0.0 0.0 0.0 1.5 7.0 21 0.14 0.19 0.21 0.18 1.5 6.2 3.7 0.0 0.0 0.0 0.0 1.5 7.0 21 0.14 0.19 0.21 0.18 1.5 8.7 0 21 0.14 0.19 0.21 0.18 1.5 8.7 0 0.0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 0.0 1.5 8.7 0 0.0 0.0 1	Pedestrians	2							
11 None No	Lane Width (m)	3.6							
None None No	Walking Speed (m/s)	[-							
Mone None None Hone Hone Hone Hone Hone Hone Hone H	Percent Blockage	0							
ed 1183 336 666 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Right turn flare (veh)								
ed 1183 336 666	Median type				None	None			
ed 1183 336 666	Median storage veh)								
eed 1183 336 666	Upstream signal (m)								
1183 336 666	pX, platoon unblocked								
1183 336 666 6.8 7.0 42 3.5 3.3 2.3 8.3 79 86 159 651 889 27 104 124 328 362 299 27 104 124 0 0 0 118 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.21 0.18 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.21 0.18 159 652 3.7 0.0 0.0 0.0 0.0 0.17 0.21 0.14 0.19 0.21 0.18 159 651 889 1700 1700 0.00 0.17 0.21 0.14 0.19 0.21 0.18 159 651 889 1700 1700 0.00 0.18 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	vC, conflicting volume	1183	336	999					
1183 336 666 68 7.0 42 3.5 3.3 2.3 88 79 86 159 651 889 1740 124 328 328 362 299 27 140 124 328 328 362 299 27 140 124 328 328 362 299 27 140 124 328 328 362 299 27 140 124 0 0 0 0 0 0 0 0.17 0.21 0.14 0.19 0.19 0.21 0.18 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.19 0.21 0.18 159 A	vC1, stage 1 conf vol								
1183 336 666 8 7.0 42 3.5 3.3 2.3 8 79 86 159 651 889 159 657 889 27 140 124 0 0 0 0 27 140 0 0 0 0 0 118 159 62 37 0.0 0.0 0.0 100 150 0 0 0 0.0 1153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 153 120 97 0.0 0.0 0.0 154 155 1.5 0.0 0.0 0.0 155 155 155 155 155 155 155 15	vC2, stage 2 conf vol								
6.8 7.0 4.2 3.5 3.3 2.3 8.8 79 86 159 651 889 EB 1 EB 2 NB 1 NB 2 NB 3 SB 1 SB 2 27 10 124 0 0 0 0 77 10 144 0 0 0 0 118 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.21 0.18 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.21 0.18 15 6.2 3.7 0.0 0.0 0.0 0.0 D B A 0.10 0.0 0.0 C C ry y Utilization 37.3% ICU Level of Service	vCu, unblocked vol	1183	336	999					
3.5 3.3 2.3 88 79 86 159 651 889 159 651 889 27 140 124 328 328 328 322 299 27 140 124 328 328 328 322 299 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	tC, single (s)	6.8	7.0	4.2					
35 33 23 83 79 86 159 651 889 27 140 124 328 328 362 299 27 140 124 328 328 362 299 27 0 124 0 0 0 0 118 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.19 0.21 0.18 (m) 4.5 6.2 37 0.0 0.0 0.0 0.0 D B A 0.0 0.0 0.0 153 12.0 9.7 0.0 0.0 0.0 0.0 C C 2 37 0.0 0.0 0.0 0.0 D B A 23 37 0.0 0.0 0.0 0.0 D B A 32 37 37 37 37 37 37 37 37 37 37 37 37 37	tC, 2 stage (s)								
159 86 88 150 88 150 88 150 88 150 88 150 88 150 88 150 88 150 88 150 15	tF (s)	3.5	3.3	2.3					
159 651 889 889 881 882 882 882 882 882 882 882 882 882 882 882 882 882 882 882 882 883	p0 queue free %	8	29	88					
EB 1 EB 2 NB 1 NB 2 NB 3 SB 1 SB 2 27 140 124 328 328 362 299 7 10 124 0 0 0 0 118 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.19 0.21 0.18 4.5 6.2 37 0.0 0.0 0.0 0.0 D A A 15.3 12.0 9.7 0.0 0.0 0.0 C C 2 3.3	cM capacity (veh/h)	159	651	888					
27 140 124 328 328 362 299 0 124 0 0 0 0 0 0 142 0 0 0 0 0 0 0 142 0 0 0 0 0 0 0 148 0 0 0 0 0 118 159 651 889 1700 1700 1700 0.17 0.21 0.14 0.19 0.19 0.21 0.18 4.5 6.2 3.7 0.0 0.0 0.0 0.0 D B A 15 15.3 120 9.7 0.0 0.0 0.0 0.0 C 2 37.3% ICU Level of Service	Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB 3	SB 1	SB 2	
27 0 124 0 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0	Volume Total	27	140	124	328	328	362	299	
159 651 889 1700 1700 1700 178 159 651 889 1700 1700 1700 1700 1700 1700 1700 170	Volume Left	27	0	124	0	0	0	0	
159 651 889 1700 1700 1700 1700 1700 1700 1700 170	Volume Right	0	140	0	0	0	0	118	
0.17 0.21 0.14 0.19 0.19 0.21 0.18 4.5 6.2 3.7 0.0 0.0 0.0 0.0 D A A A A A A A A A A A A A A A A A A A	cSH	129	651	883	1200	1200	1200	1700	
4.5 6.2 3.7 0.0 0.0 0.0 0.0 0.0 32.3 12.0 9.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Volume to Capacity	0.17	0.21	0.14	0.19	0.19	0.21	0.18	
32.3 12.0 9.7 0.0 0.0 0.0 0.0 D B A 0.0 0.0 0.0 C C C 2.3 2.3 coty Utilization 37.3% ICU Level of Service min) 15	Queue Length 95th (m)	4.5	6.2	3.7	0.0	0.0	0.0	0.0	
15.3 1.5 0.0 C	Control Delay (s)	32.3	12.0	9.7	0.0	0.0	0.0	0.0	
15.3 1.5 0.0 C V 2.3 2.3 ICU Level of Service	Lane LOS	Ω	В	∢					
y 2.3 2.3 CU Level of Service 15 15	Approach Delay (s)	15.3		1.5			0.0		
y 2.3 2.3 Lülization 37.3% ICU Level of Service 15	Approach LOS	O							
2.3 Utilization 37.3% ICU Level of Service 15	Intersection Summary								
Utilization 37.3% ICU Level of Service	Average Delay			2.3					
	Intersection Capacity Utilization	u.		37.3%	ಶ	J Level of	Service	A	
	Analysis Period (min)			15					

Synchro 11 Report Page 1 With Kerr St Improvements BA Group - EFS

Timings 2: Kerr Street & Shepherd Road

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Future Lotal PM (Phase 1)	err Village (8124-01)
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	Ø4					4				5.0	22.0	3.0	%1	0.6	3.0	1.0					3.0	3.0	0.0	0.0	None	7.0	11.0	0				
→	SBT	*	445	445	¥	9		9									0:0	5.2			3.5					10.0		2				
٠	SBL	<u>r</u>	155	155	pm+pt	-	9	τ-											Lead	Yes	2.5	3.0	0:0	0:0	None							
•	NBR	*	110	110	Perm		2	2		18.0	28.2		50								3.5							2				
—	NBT	‡	230	530	Ϋ́	2		2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Min	10.0	13.0	ა				
Ļ	WBT	\$	0	0	Ν	œ		∞		2.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0				
-	WBL	*	100	100	Perm		∞	∞		2.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0			_	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 108	Actuated Cycle Length: 49.1	Natural Cycle: 65



Synchro 11 Report Page 2 With Kerr St Improvements BA Group - EFS

Queues Future Total PM (Phase 1)
2: Kerr Street & Shepherd Road Upper (8124-01)

2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
	>	↓	←	*	٠	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	103	149	546	113	160	459	
v/c Ratio	0.41	0.23	0.40	0.17	0.26	0.21	
Control Delay	23.4	0.8	12.5	3.7	4.9	4.6	
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.1	
Total Delay	23.4	0.8	12.5	3.7	5.2	4.6	
Queue Length 50th (m)	9.7	0.0	16.6	0.0	4.1	7.1	
Queue Length 95th (m)	20.9	0.0	31.9	9.7	11.2	14.8	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	794	1091	3385	1471	856	3574	
Starvation Cap Reductn	0	0	0	0	348	1631	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.14	0.16	0.08	0.31	0.24	
Intersection Summary							

With Kerr St Improvements

BA Group - EFS

Page 3

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

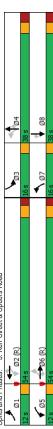
Movement EB1 EB1 EB1 MB1		1	t	×	-	ļ	1	•	—	•	۶	→	*
1900 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
100 100 0 145 0 530 110 155 445 100 100 100 145 0 530 110 155 445 100 1900 1900 1900 1900 1900 1900 1900 100 0.09 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 1.00 100 0.97 0.97 0.97 0.97 0.97 0.97 100 0.0 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0 0.0 100	Lane Configurations	*	£		r	2		r	**	¥c.	K	**	•
1900 1900	Traffic Volume (vph)	0	0	0	100	0	145	0	530	110	155	445	
1900 1900	Future Volume (vph)	0	0	0	100	0	145	0	530	110	155	445	
40 40 52 52 40 52 100 100 0.95 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 100 0.98 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 100 0.0 0.0 0.0 0.0 100 0.0 0.0 100 0.0 0.0 0.0 100 0.0 0.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
1.00 0.97 1.00 0.97 1.00 0.97 1.00 0.98 1.00 0.98 1.00 0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
1,00	Frpb, ped/bikes				1.00	0.97			1.00	0.97	1.00	1.00	
1,00	Flpb, ped/bikes				0.98	1.00			1.00	1.00	1.00	1:00	
177 1538 3539 1543 1500 1	き				1.00	0.85			1.00	0.85	9.	9:	
1777 1338 3339 1943 3544 3575 3575	Fit Protected				0.95	1.00			1.00	1.00	0.95	0.1	
1588 1538 1530 1540 1540 1540 1540 1540 1540 1540 154	Satd. Flow (prot)				1/1/	1538			3539	1543	1804	35/4	
0.97 0.97 <td< td=""><td>Satd Flow (norm)</td><td></td><td></td><td></td><td>1368</td><td>1538</td><td></td><td></td><td>3539</td><td>1543</td><td>684</td><td>3574</td><td></td></td<>	Satd Flow (norm)				1368	1538			3539	1543	684	3574	
0 0 0 103 0 149 0 546 113 160 459 0 0 0 0 121 0 0 0 6 90 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	26.0	26.0	0.97	0.97	0.97	0.97	0.97
0 0 0 0 121 0 0 69 0 0 69 0 0 0 0 0 0 0 0 0 0 0 0 0	Adi. Flow (vph)	0	0	0	103	0	149	0	546	113	160	459	
0 0 0 103	RTOR Reduction (vph)	0	0	0	0	121	0	0	0	69	0	0	S
0 % 15 15 6 6 0 <td>Lane Group Flow (vph)</td> <td>0</td> <td>0</td> <td>0</td> <td>103</td> <td>28</td> <td>0</td> <td>0</td> <td>546</td> <td>44</td> <td>160</td> <td>429</td> <td>0</td>	Lane Group Flow (vph)	0	0	0	103	28	0	0	546	44	160	429	0
5 0% 0% 3% 0% 1% 0% 1% 2% 0% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Confl. Peds. (#/hr)	2		15	15		2			2	2		
Name	Heavy Vehides (%)	%0	%0	%0	3%	%0	%	%0	1%	2%	%0	1%	%0
Perm NA Perm NA Perm NA Perm NA 8	Bus Blockages (#/hr)	0	0	0	0	က	0	0	2	0	0	0	
4 8 8 2 2 5 6 6 6 6 6 6 6 6 6	Turn Type	Perm			Perm	≨		Perm	¥	Perm	pm+pt	ΑN	Реш
1	Protected Phases		4			8			2		_	9	
9.2 9.2 19.0 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 19.0 19.0 30.6 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0	Permitted Phases	4			∞			7		2	9		ω
9.2 9.2 19.0 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 30.6 19.0 19.0 19.0 19.0 19.0 19.0 19.0 19.0	Actuated Green, G (s)				9.5	9.5			19.0	19.0	30.6	30.6	
0.0	Effective Green, g (s)				9.5	9.5			19.0	19.0	30.6	30.6	
10	Actuated g/C Ratio				0.19	0.19			0.39	0.39	0.62	0.62	
3.0 3.0 3.0 3.5 3.5 3.5 2.5 3.6 2.8 3.0 2.5 3.6 2.8 3.6 2.8 3.5 2.5 3.6 2.8 3.6 2.8 3.6 2.8 3.6 2.8 3.6 2.8 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6 3.6	Clearance Time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
256 288 1372 598 600 2 0.02 0.015 0.014 0.008 0.10 0.10 0.10 0.10 0.10 1.00 1.00 1.0	Vehide Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
0.02 0.016 0.017 0	Lane Grp Cap (vph)				256	288			1372	298	009	2231	
0.00 0.03 0.12 0.03 0.12 0.03 0.12 0.03 0.12 0.12 0.03 0.12 0.12 0.13 0.12 0.13 0.13 0.13 0.13 0.13 0.13 0.13 0.13	v/s Ratio Prot					0.02			00.15		9.08	0.13	
17.5 16.5 10.9 9.5 4.0 17.6 16.5 10.9 9.5 4.0 17.6 16.5 10.9 9.5 4.0 17.6 16.5 10.9 9.5 4.0 17.6 10.0 11.0 10.0 10.0 10.0 17.7 18.5 16.6 11.1 9.5 4.2 18.5 16.6 11.1 9.5 4.2 18.5 16.6 11.1 9.5 4.2 18.5 16.6 11.1 9.5 4.2 17.4 10.8 18.8 A A A 0.37 17.4 10.8 18.8 A A 0.37 17.4 10.8 18.9 A A 19.0 Sum of lost time (s) 18.2 49.0 Sum of lost time (s) 19.2 17.1 13.2 19.3 13.2 14.6% 19.3 13.2 14.6% 19.3 13.2 14.6% 19.3 13.2 14.6% 19.3 13.2 14.6% 19.3 14.6 14.6 14.6 14.6 14.6 14.6 14.6 14.6	v/s Ratio Perm				80.03	9				0.03	0.12		
1.0 100 100 100 100 100 100 100 100 100	v/c Katio				0.40	0.10			0.40	0.07	0.27	0.21	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Unitorm Delay, d1				0.7	10.5			0.0	υ. υ.	0.4	0.4	
1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	horomontal Dolay, d2				5 6	5 5			0.0	0.0	3.0	3 5	
9.2 HCM 2000 Level of Service A 54.6% ICU Level of Service A 15.7	Delay (s)				- 8 5 R	16.6			111	- u	4.2	- 0	
9.2 HCM 2000 Level of Service A 6.37 Sum of lost time (s) A 6.46% ICU Level of Service A 7 15.2 54.6%	Lovel of Service				5 a	2 0			α	5.0	7.	P	
9.2 HCM 2000 Level of Service A 0.37 49.0 Sum of lost time (s) 13.2 54.6% ICU Level of Service A 15	Annmach Delay (s)		0		ב	17.4			10.8	C	c	4	
9.2 HCM 2000 Level of Service A 0.37 49.0 Sum of lost time (s) 13.2 54.6% ICU Level of Service A 15	Approach LOS) A						2			٨	
9.2 HCM 2000 Level of Service 0.37 49.0 Sum of lost time (s) 54.6% ICU Level of Service 15	001100000000000000000000000000000000000		:)			1			:	
9.2 HCM 2000 Level of Service 0.37 49.0 Sum of lost time (s) 54,6% ICU Level of Service 15	Intersection Summary												
0.37 49.0 Sum of lost time (s) 54.6% ICU Level of Service 15	HCM 2000 Control Delay			9.5	¥	CM 2000	Level of §	Service		⋖			
49.0 Sum of lost time (s) zation 54.6% ICU Level of Service	HCM 2000 Volume to Capar	city ratio		0.37									
IIIzation 34.0% TO Level of Service	Actuated Cycle Length (s)	40,1		49.0	ഗ്ഗ ⊆	um of lost	time (s)			13.2			
	Intersection Capacity Unital			34.070	2	o revel o	oei vice			τ			
	Analysis Period (min)			Ω									

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

Lane Group													
1		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
596 135 300 935 445 150 156 236 240 5 95 135 300 935 445 150 156 250 240 1 NA Perm Perm Perm Perm Perm Prof. NA Perm Prof. 140 30 240 2		F	44	¥.	F	**	*	*	+	K.	1	*	*-
NA Perm pm-pt NA Perm Pm-pt NA Perm Prof Prof NA Perm Prof P		82	595	135	300	932	445	150	155	235	260	240	.8
1 NA Perm pm-pt NA Perm pm-pt NA Perm Prof NA Perm 6 5 2 2 4 4 3 8 8 8 8 8 8 8 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10		82	595	135	300	932	445	150	155	235	260	240	8
6 6 5 2 7 4 3 8 8 6 6 5 2 7 4 4 3 8 8 6 6 5 2 7 4 4 3 8 8 8 8 8 8 8 8 8		n+pt	ΑN	Perm	pm+pt	N A	Perm	pm+pt	Ϋ́	Perm	Prot	≨	Perm
Secondary Seco	Protected Phases	-	9		2	2		7	4		က	∞	
250 250 70 250 70 100 100 70 100 24.3 30.9 30.9 100 30.9 30.9 100 34.3 34.3 100 34.3 34.3 100 34.3 30.9 100 30.9 30.9 100 34.3 34.3 10.0 34.3 10.0	Permitted Phases	9		9	2		2	4		4			ω
25.0 25.0 7.0 25.0 25.0 7.0 10.0 10.0 7.0 10.0 30.9 30.9 10.0 34.3 34.3 10.0 34.3 3.9 10.0 36.3 30.9 10.0 34.3 34.3 10.0 34.3 30.9 10.0 38.0 38.0 16.0 38.0 48.1 34.1 30.0 34.3 34.3 10.0 38.0 38.0 48.1 34.1 30.0 31.7 31.7 31.7 31.7 31.7 31.7 31.7 31.7	Detector Phase	-	9	9	2	2	2	7	4	4		∞	ω
250 250 70 250 70 100 100 100 70 100 100 70 100 100 230 309 309 309 100 34.3 4.3 4.3 4.0 10 34.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.3 4.	Switch Phase												
309 309 100 309 309 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 100 343 343 343 343 343 343 343 343 343 3	Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
540 540 120 540 150 150 380 160 380 160 380 160 380 160 380 160 380 160 845 160 845 178 131 178 178 178 178 178 178 178 178 178 17		10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	84.3
4.50%, 450%, 100%, 450%, 450%, 133%, 317%, 133%, 317%,		12.0	54.0	54.0	12.0	54.0	54.0	16.0		38.0	16.0		38.0
9 48.1 48.1 90 48.1 48.1 13.0 31.7 13.0 31.0 13.0 13.0 13.0 13.0 13.0 13.0	_	%0°C	45.0%	45.0%	10.0%	45.0%	45.0%	13.3%		31.7%	13.3%		31.7%
37 37 37 30 37 37 30 33 33 33 33 33 33 33 33 33 33 33 33	Maximum Green (s)	9.0	48.1	48.1	9.0	48.1	48.1	13.0		31.7	13.0		31.7
2.2 2.2 0.0 2.2 0.0 3.0 3.0 3.0 0.0 3.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0		3.3	3.0		33
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0		3.0	0.0		3.0
5.9 5.9 3.0 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0
Lag	Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0		6.3	3.0		6.3
yes Yes <td></td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td></td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td>		Lead	Lag	Lag	Lead	Lag	Lag	Lead		Lag	Lead	Lag	Lag
5 55 55 25 40 4.0 2.5 4.0 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0		2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
9 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	(s) e	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9 C-Min C-Min None C-Min None None None None None None T 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70 70 70 70 70 70 70 70 70 70 70 70 70 7	_	None	Q-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
14.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0	Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
15 15 15 35 35 35 22-WBTL and 6-EBTL, Slart of Green	Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Intersection Summary Cycle Length: 120 Actualed Cycle Length: 120 Offset 94 (147), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Corter 99 (147), Reterenced to phase 2:WBTL and 6:EBTL, Start of Green Control Type: Actualed-Coordinated	Pedestrian Calls (#/hr)		12	15		15	15		35	32		35	35
Cycle Length: 120 Actuated Cycle Length: 120 Offset 94 (147), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated	Intersection Summary												
Actuated Cycle Length: 120 Offset 49 (1%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type, Actuated-Coordinated	Cycle Length: 120												
Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated	Actuated Cycle Length: 120												
Natural Cycle: 90 Control Type: Actuated-Coordinated	Offset 49 (41%), Referenced to p	phase 2	::WBTL a	nd 6:EB	TL, Start	of Green							
Control Type: Actuated-Coordinated	Natural Cycle: 90												
	Control Type: Actuated-Coordina	ated											

Splits and Phases: 3: Kerr Street & Speers Road



Synchro 11 Report Page 5 With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) Queues 3: Kerr Street & Speers Road

	4	†	<i>></i>	>	↓	4	•	←	•	۶	→	*
Lane Group	B	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	626	142	316	984	468	158	163	247	274	253	8
v/c Ratio	0.28	0.39	0.18	0.63	0.56	0.48	0.52	0.49	0.54	0.77	0.73	0.24
Control Delay	10.8	22.7	6.6	19.3	23.6	3.7	34.2	48.2	10.0	6.99	57.9	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	22.7	6.6	19.3	23.6	3.7	34.2	48.2	10.0	6.99	57.9	9.6
Queue Length 50th (m)	10.9	52.5	9.4	33.2	81.9	0.0	26.8	34.9	1.6	32.6	26.8	0.0
Queue Length 95th (m)	22.0	91.6	21.0	27.7	119.8	19.3	39.3	51.8	22.2	#47.8	78.7	12.4
Internal Link Dist (m)		138.4			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	340	1591	784	201	1771	926	323	495	268	375	501	458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.39	0.18	0.63	0.56	0.48	0.49	0.33	0.43	0.73	0.50	0.18

Intersection Summary

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

Queue shown is maximum after two cycles.

With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Total DM /Dh Future

lase 1)	(8124-01)
lotal PM (Phase T	Kerr Village
lre lota	Upper

Lance Configurations Fig.													
100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
596 135 300 935 445 150 156 236 236 240 1996 1990 1900	Lane Configurations	<i>y</i> -	++	¥C	<i>y</i> -	₩	¥C	*	+	W.	1	+	¥c_
1900 1900	Traffic Volume (vph)	82	595	135	300	932	445		155	235	260	240	80
1900 1900	Future Volume (vph)	82	262	135	300	932	445		155	235	260	240	80
5.9 5.9 5.9 5.9 5.9 3.0 6.3 1.00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	Total Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
1.00 0.97 1.00 1.00 0.99 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.0	1.00	0.97	1.00	1.00
1,000 1,00	Frpb, ped/bikes	1.00	9.	0.97	9.	1:00	0.9 8	1.00	9.	0.93	1.00	1.00	0.93
1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 1,00 0,085 1,00 0,085 0,09	Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1:00	1.00	1.00	1.00	1.00
100 100 0.99 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 0.	Fr	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
S511 1560 1750 35.39 1485 1786 1877 1486 3467 1900 1160 1160 100	Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
100 100 0.33 1.00 1.00 0.35 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 0.	Satd. Flow (prot)	1802	3511	1560	1750	3539	1485	1768	1877	1486	3467	1900	1501
Sign 1560 607 3539 1485 649 1877 1486 3467 1900 196 1995 199	-It Permitted	0.22	1.00	1.00	0.33	1.00	1.00	0.35	1.00	1.00	0.95	1.00	1.00
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Satd. Flow (perm)	423	3511	1560	607	3539	1485	649	1877	1486	3467	1900	1501
6.26 142 316 984 468 158 163 247 253 6.26 6.4 0 0.234 168 163 247 253 6.26 5 36 36 18 18 17 274 253 2.% 0% 3% 2% 2% 1% 0% 1% 0% 4 0 0 0 0 0 0 0 0 1 0	Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
0 778 0 0 234 0 0 196 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	68	626	142	316	984	468	158	163	247	274	253	84
626 64 316 984 234 188 163 51 274 253 2 2% 3% 36 36 35 4 0 0 0 0 0 0 3 0 0 0 1 NA Perm pm+pt NA Perm pm+pt NA Perm Prot NA Per S44 544 710 600 60.0 33.1 214 214 124 22.1 2 5 44 544 710 60.0 60.0 33.1 214 214 124 22.1 2 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 4 0 1 551 707 488 1769 742 288 334 265 339 6.3 6.3 1 551 81 707 488 1769 742 288 334 265 349 6.13 1 5 18 18 13 12 20 8 178 349 44.4 41.9 52.4 46.1 4 2 18 18 17 10 0.04 0.03 10.0 1.00 1.00 1.00 1.00 1.00 2 18 18 17 12 20.8 178 349 44.4 41.9 52.4 46.1 4 2 18 21 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	RTOR Reduction (vph)	0	0	28	0	0	234	0	0	196	0	0	69
2 % 36 35 36 35 36 35 36 37 37 47 47 47 48 47	ane Group Flow (vph)	88	626	25	316	984	234	128	163	21	274	253	15
2% 0% 3% 2% 1% 0% 1% 1% 0% 1 4 0	Confl. Peds. (#/hr)	9		2	2		9	32		35	35		35
NA Perm pm+pt NA Perm pm+pt NA Perm Prof Perm Pr	Heavy Vehicles (%)	%0	2%	%0	3%	5%	5%	%	%0	%	1%	%0	%0
NA Perm pm+pt NA Perm pm+pt NA Perm Prof NA	3us Blockages (#/hr)	0	4	0	0	0	0	0	က	0	0	0	0
6 5 2 7 4 3 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9	urn Type	pm+pt	ΑA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	¥	Perm
6 6 2 3 4 4 4 4 4 124 22.1 2 6 44 544 71.0 60.0 60.0 33.1 214 214 12.4 22.1 2 6 045 045 059 050 050 028 018 018 0.10 0.18 0 6 05 59 30 59 59 30 6.5 5.2 5.4 0 4.0 2.5 4.0 6 55 55 55 55 55 2.5 4.0 4.0 2.5 4.0 6 0.00 0.00 0.05 0.05 0.05 0.09 0.00 0.03 6 0.00 0.05 0.05 0.05 0.05 0.09 0.00 0.03 6 0.00 0.05 0.05 0.05 0.05 0.09 0.00 7 8 18 7 13 2 20.8 17.8 34.9 44.4 41.9 52.4 46.1 46.1 40 7 9 0.34 0.09 0.05 0.05 0.05 0.09 0.00 8 18 1 13 2 20.8 17.8 34.9 44.4 41.9 52.4 46.1 46.1 40 8 247 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Protected Phases	_	9		2	2		7	4		က	∞	
6.44 56.4 71.0 60.0 60.0 33.1 21.4 21.4 12.4 22.1 2 1 1.6 4.4 51.0 60.0 33.1 21.4 21.4 12.4 22.1 2 1 2.5 5.5 4.0 4.0 0.1 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.18 0.10 0.10 0.10 0.10 0.10 0.10 0.10 <td>Permitted Phases</td> <td>9</td> <td></td> <td>9</td> <td>2</td> <td></td> <td>2</td> <td>4</td> <td></td> <td>4</td> <td></td> <td></td> <td>∞</td>	Permitted Phases	9		9	2		2	4		4			∞
6.44 54.4 54.4 54.4 71.0 60.0 60.0 33.1 21.4 21.4 12.4 22.1 2 6.3 <	Actuated Green, G (s)	62.4	54.4	54.4	71.0	0.09	0.09	33.1	21.4	21.4	12.4	22.1	22.1
159 6.45 0.45 0.50 0.20 0.18 0.19 0.10 0	Effective Green, g (s)	62.4	54.4	54.4	71.0	0.09	0.09	33.1	21.4	21.4	12.4	22.1	22.1
5.9 5.9 5.9 5.9 5.9 3.0 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 3.0 6.3 6.3 3.0 6.3 6.3 3.0 6.3 4.0 2.5 4.0 2.5 4.0 2.5 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 3.49 3.2 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 4.0 2.5 4.0 <td>Actuated g/C Ratio</td> <td>0.52</td> <td>0.45</td> <td>0.45</td> <td>0.59</td> <td>0.50</td> <td>0.50</td> <td>0.28</td> <td>0.18</td> <td>0.18</td> <td>0.10</td> <td>0.18</td> <td>0.18</td>	Actuated g/C Ratio	0.52	0.45	0.45	0.59	0.50	0.50	0.28	0.18	0.18	0.10	0.18	0.18
155 55 55 55 55 55 54 0 4.0 2.5 4.0 1591 707 488 1769 742 888 349 866 349 0.148 0.04 0.03 0.05 0.06 0.05 0.09 0.139 0.09 0.05 0.05 0.49 0.19 0.77 0.72 0.14 17 12 2.08 178 34.9 44.4 41.9 52.4 461 0.15 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.13 472 158 2.0 18.9 366 45.9 42.4 61.4 53.9 0.24 2.01 2.01 1.02 1.03 3.0 0.24 2.01 2.01 2.01 41.8 55.4 0.27 2.01 2.01 2.01 2.01 0.27 2.01 2.01 2.01 2.01 0.27 2.01 2.01 2.01 0.27 2.01 2.01 2.01 0.27 2.01 2.01 3.01 0.27 2.01 2.01 3.01 0.27 2.01 2.01 3.01 0.27 2.01 3.01 3.01 0.27 2.01 3.01 3.01 0.27 2.01 3.01 3.01 0.27 2.01 3.01 3.01 0.28 2.01 3.01 3.01 0.29 2.01 3.01 3.01 0.20 2.01 3.01 3.01 0.20 2.01 3.01 3.01 0.20 3.01 3.01 3	Searance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
1591 707 488 1769 742 288 334 265 358 349 1018	/ehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
9 0.18	ane Grp Cap (vph)	311	1591	707	488	1769	742	288	334	265	358	349	276
0.09	//s Ratio Prot	0.02	0.18		c0.07	0.28		0.02	0.09		00.08	c0.13	
2 1.8 18.7 13.2 2.08 13.8 34.9 4.4 4.19 52.4 46.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	//s Ratio Perm	0.13		0.04	c0.31		0.16	0.10		0.03			0.01
2 18 187 132 208 178 34.9 44.4 41.9 52.4 46.1 1.0 0.94 2.51 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	//c Ratio	0.29	0.39	0.00	0.65	0.56	0.32	0.55	0.49	0.19	0.77	0.72	0.06
8 0.94 2.51 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Jniform Delay, d1	15.3	21.8	18.7	13.2	20.8	17.8	34.9	4.4	41.9	52.4	46.1	40.4
1 0.7 0.3 2.6 1.3 1.1 1.7 1.5 0.5 9.0 7.8 1.2 1.3 47.2 15.8 2.0 18.9 36.6 45.9 42.4 61.4 63.9 7.8 24.7 2 0.1 8.9 24.7 2 0.1 8.9 24.7 2 0.1 8.9 24.7 2 0.1 8.0 0.1 20.1 8.6 4.1 8 56.4 2 0.7 8.0 HCM 2000 Level of Service C 0.70 Sum of lost time (s) 18.2 18.0 Residue D 18.2 18.2 18.3 19.3 19.3 19.3 19.3 19.3 19.3 19.3 19	Progression Factor	0.76	0.94	2.51	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3 C D B C B D D E D C C D C C D D C D C D D C D C D D C D D C D D C D D C D D C D D C D D C D D C D D D C D D D C D D D C D	ncremental Delay, d2	0.4	0.7	0.3	5.6	ر ن	[1.7	7.	0.5	9.0	7.8	0.1
3 C D B C B D D D E 24.7 20.1 41.8 C C D 30.0 HCM 2000 Level of Service C 0.70 Sum of lost time (s) 18.2 78.6% ICU Level of Service D 15.07 18.2	Delay (s)	12.1	21.3	47.2	15.8	22.0	18.9	36.6	45.9	45.4	61.4	53.9	40.5
24.7 20.1 41.8 C C D 30.0 HCM 2000 Level of Service C 0.70 Sum of lost time (s) 18.2 78.8% ICU Level of Service D 15.0 Sum of Service D	evel of Service	ш	ပ	□	М	ပ	ш	□	□	□	ш	Ω	Ω
C C D 30.0 HCM 2000 Level of Service C 0.70 Sum of lost time (s) 18.2 78.8% ICU Level of Service D 45.150 Sum of lost time (s) 18.2 78.8% ICU Level of Service D	Approach Delay (s)		24.7			20.1			41.8			55.4	
30.0 HCM 2000 Level of Service 0.70 Sum of lost time (s) 78.6% ICU Level of Service	Approach LOS		O			O			Ω			ш	
30.0 HCM 2000 Level of Service 0.70 Sum of lost time (s) 78.6% ICU Level of Service	Intersection Summary												
0.70 120.0 Sum of lost time (s) 78.6% ICU Level of Service	HCM 2000 Control Delay			30.0	ľ	CM 2000	Level of	Service		O			
120.0 Sum of lost time (s) 78.6% ICU Level of Service	HCM 2000 Volume to Capa	city ratio		0.70									
zation 78.6% ICU Level of Service	Actuated Cvde Length (s)			120.0	Ś	am of lost	time (s)			18.2			
π,	ntersection Capacity Utiliza	tion		%9.82	0	U Level o	of Service	4		Ω			
	Analysis Doriod (min)			45									

With Kerr St Improvements BA Group - EFS

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Timings 4: Dorval Road & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	1	†	<u> </u>	-	ţ	4	•	←	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	<u> </u>	₩	X _	۳		*-	<u>r</u>	4₽	F	₩	¥C	
Traffic Volume (vph)	415	510	20	170		210	65	625	270	695	375	
Future Volume (vph)	415	510	20	170		510	65	625	270	695	375	
Turn Type	Prot	Ϋ́	Perm	pm+pt	≨	vo+mq	pm+pt	₹	pm+pt	Ϋ́	Perm	
Protected Phases	7	4		က		~	2	2	~	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	~	2	2	~	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	19.0	0.44	0.44	17.0	45.0	19.0	11.0	40.0	19.0	48.0	48.0	
Total Split (%)	15.8%	36.7%	36.7%	14.2%	35.0%	15.8%	9.5%	33.3%	15.8%	40.0%	40.0%	
Maximum Green (s)	15.0	37.0	37.0	13.0	32.0	15.0	7.0	33.0	15.0	41.0	41.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Actuated Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 171 Start of Green
Natural Cycle: 115
Control Type: Actuated-Coordinated

00 603 Splits and Phases: 4: Dorval Road & Speers Road **▲** Ø2 (R) \$ 005

\$\displays{1}{\psi}\$ ± 104

Synchro 11 Report Page 8 With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) Queues 4: Dorval Road & Speers Road

807 0.51 408 2.6 2.6 6.4 3.2 0.58 755 0.58 16.3 0.0 16.3 63.5 28.0 494.4 293 0.89 61.8 0.0 61.8 30.6 10.0 0.89 761 0.80 47.2 0.0 47.2 86.0 108.8 0.78 0.25 21.2 0.0 21.2 9.1 0.25 70.0 554 0.77 26.5 0.0 26.5 42.3 87.4 55.0 750 0.78 54.8 0.0 54.8 77.8 77.8 472.1 0 0 0.45 185 0.47 31.9 0.0 31.9 29.2 53.4 85.0 0.00 0.3 0.0 0.0 0.0 0.09 554 0.50 35.6 0.0 35.6 56.6 73.1 412.3 0.49 1121 451 451 0.92 77.3 0.0 77.3 ~59.7 60.0 488 0 0 0 0 0 ve Ratio
Control Delay
Queue Delay
Queue Bength 50th (m)
Queue Length 56th (m)
Queue Length 95th (m)
Inhamal Link Dist (m)
Base Capacity (vph)
Base Capacity (vph)
Starvation Cap Reductn
Spillack Cap Reductn
Storage Cap Reductn
Reduced vic Ratio Lane Group Flow (vph)

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

96th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

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With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Phase 1)
Upper Kerr Village (8124-01)

	•	†	*	>	ţ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	ŧ	¥L.	r	\$	*-	<u>, </u>	₩		<u>_</u>	‡	¥.
Traffic Volume (vph)	415	510	20	170	069	510	65	625	75	270	695	375
Future Volume (vph)	415	210	20	120	069	210	92	625	75	270	969	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Utill. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1:00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	0.1	1.00
Fipb, ped/bikes	9.5	9.6	1.00	0.1	8.6	1.00	1.00	00.1		0.0	9.5	0.1
Fit Protected	000	8.6	0.00	00.0	00.1	100	00.0	0.30		00.0	8.5	5.6
Safd Flow (prof.)	3433	3560	1556	1786	3546	1581	1805	3516		1787	3574	1500
Elt Dermitted	0.95	100	100	040	100	100	0.34	100		0 14	5 5	100
Satd. Flow (perm)	3433	3560	1556	743	3546	1581	597	3516		267	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	554	54	185	750	554	71	629	82	293	755	408
RTOR Reduction (vph)	0	0	37	0	0	43	0	∞	0	0	0	229
Lane Group Flow (vph)	421	554	17	185	750	211	71	753	0	293	755	179
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehicles (%)	5%	1%	5%	1%	1%	1%	%0	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	Ν	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	A	Perm
Protected Phases	7	4		က	∞	-	2	2		_	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.1	37.7	37.7	44.2	32.4	48.6	38.1	32.3		52.5	42.7	42.7
Effective Green, g (s)	17.1	37.7	37.7	44.2	32.4	48.6	38.1	32.3		52.5	42.7	42.7
Actuated g/C Ratio	0.14	0.31	0.31	0.37	0.27	0.41	0.32	0.27		0.44	0.36	0.36
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	2.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	489	1118	488	376	957	640	247	946		322	1271	268
v/s Ratio Prot	c0.13	0.16		0.05	0.21	c0.11	0.01	0.21		00.12	0.21	
v/s Ratio Perm		c	0.01	0.13	0	0.22	0.08			00.28		0.11
We Katio	0.92	0.50	0.03	0.49	0.78	0.80	67.0	0.80		18.0	0.59	0.31
Procession Factor	0.00	1 00	1 00	1 44	120	0.83	100	100		1 49	0.46	0.15
Incremental Delay, d2	23.0	0.7	0.1	1.0	4.8	6.7	9.0	6.9		24.0	1.7	1.2
Delay (s)	73.8	34.2	28.6	39.6	53.6	32.8	29.8	47.7		66.5	16.2	5.4
Level of Service	ш	ပ	ပ	Ω	Ω	ပ	ပ	Ω		ш	В	∢
Approach Delay (s)		20.7			44.1			46.2			23.3	
Approach LOS		۵			Ω			۵			ပ	
Intersection Summary												
HCM 2000 Control Delay			39.6	ĭ	3M 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	ratio		06:0									
Actuated Cycle Length (s)			120.0	ng i	Sum of lost time (s)	time (s)			22.0			
Intersection Capacity Utilization	ر		85.4%	೨	U Level o	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Timings

5: St. Augustine Drive & Speers Road	ve & Sp	eers F	Road				Upper Kerr Village (8124-01)
	1	†	ţ	*	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	<u>, , , , , , , , , , , , , , , , , , , </u>	₩	₩.	*	<u>, , , , , , , , , , , , , , , , , , , </u>	.	
Traffic Volume (vph)	9	820	1130	52	2	0	
Future Volume (vph)	9	820	1130	52	22	0	
Turn Type	Perm	Ϋ́	ΑN	Perm	Perm	ΑΝ	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	7	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0	
Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%	
Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	Q Min	C-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	to phase	4:EBTL a	Ind 8:WB	T, Start o	f Green		
Natural Cycle: 55							
Control Type: Actuated-Coordinated	dinated						

Splits and Phases: 5: St. Augustine Drive & Speers Road



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With Kerr St Improvements BA Group - EFS

Queues 5: St. Augustine Drive & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

→	SBT		0.05					0.0	93.6		382	0	0	0	0.03		
۶	SBL		90.0			u,	1.2	5.3			311	0	0	0	0.02		
•	NBR	26	0.09	9.0	0.0	9.0	0.0	0.0			474	0	0	0	0.05		
ļ	WBT	1187	0.37	5.9	0.0	2.9	9.06	2.0	49.4		3240	0	0	0	0.37		
†	EBT	880	0.27	6.0	0.0	6.0	9.6	m8.8	472.1		3225	0	0	0	0.27		
1	EBL	10	0.03	1.0	0.0	1.0	0.2	m0.3		20.0	333	0	0	0	0.03		
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Cummary	III TEI SECIOLI CULTITURI Y

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	4	†	~	-	↓	4	•	←	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>, -</u>	₩			₩				*	<u>,-</u>	\$	
Traffic Volume (vph)	9	820	52	0	1130	9	0	0	25	2	0	10
Future Volume (vph)	9	820	52	0	1130	9	0	0	22	2	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Lane Util. Factor	1.00	0.95			0.95				1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
Fit	1.00	1.00			1.00				98.0	1.00	0.85	
Fit Protected	0.95	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (prot)	1800	3551			3569				1644	1805	1615	
Fit Permitted	0.23	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (perm)	439	3551			3569				1644	1805	1615	
Peak-hour factor, PHF	96.0	96:0	96.0	96:0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0
Adj. Flow (vph)	9	854	56	0	1177	10	0	0	56	2	0	10
RTOR Reduction (vph)	0	_	0	0	0	0	0	0	25	0	10	0
Lane Group Flow (vph)	9	879	0	0	1187	0	0	0	Ψ.	2	0	0
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehicles (%)	%0	1%	4%	%0	1%	%0	%0	%0	%0	%0	%0	%0
Turn Type	Perm	AN			AN				Perm	Perm	¥	
Protected Phases		4			∞						9	
Permitted Phases	4								2	9		
Actuated Green, G (s)	104.0	104.0			104.0				3.8	3.8	3.8	
Effective Green, g (s)	104.0	104.0			104:0				3.8	3.8	3.8	
Actuated g/C Ratio	0.87	0.87			0.87				0.03	0.03	0.03	
Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
Lane Grp Cap (vph)	380	3077			3093				52	22	51	
v/s Ratio Prot		0.25			c0.33						0.00	
v/s Ratio Perm	0.02								0.00	00.00		
v/c Ratio	0.03	0.29			0.38				0.02	0.09	0.01	
Uniform Delay, d1	1.	1.4			1.6				56.3	56.4	56.3	
Progression Factor	0.61	0.57			1.78				1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.2			0.3				0.1	0.7	0.0	
Delay (s)	0.8	1.0			3.2				56.4	57.1	56.3	
Level of Service	A	∢			∢				ш	ш	ш	
Approach Delay (s)		1.0			3.2			56.4			26.6	
Approach LOS		∢			∢			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			3.3	Ĭ	3M 2000	HCM 2000 Level of Service	Service		<			
HCM 2000 Volume to Capacity ratio	city ratio		0.37									
Actuated Cycle Length (s)			120.0	ร	Sum of lost time (s)	time (s)			12.2			
Intersection Capacity Utilization	ion		47.2%	೦	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									
Critical Lane Group												

c Critical Lane Group

With Kerr St Improvements BA Group - EFS

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Timings

Future Total PM (Phase 1)	Upper Kerr Village (8124-01)	
Timings	6: Speers Road/Cornwall Road & Cross Avenue	

*	SBR	R.R.	420	420	Perm		4	4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							Green		
۶	SBL	*	10	10	Prot	4		4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							, Start of		
ļ	WBT	₩.	1295	1295	ΑN	9		9		38.0	47.6	85.0	%2.09	78.4	3.7	2.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				nd 6:WBT		
†	EBT	‡	730	730	Ϋ́	2		2		38.0	9.74	102.0	72.9%	95.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				EBTL ar		
1	EBL	#	265	265	pm+pt	2	2	2		0.9	12.0	17.0	12.1%	11.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None							to phase 2		ordinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue

↑ Ø6 (R) - 02 (R) • **→** Ø5

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Future Total PM (Phase 1)	Upper Kerr Village (8124-01)
Queues	6: Speers Road/Cornwall Road & Cross Avenue

6: Speers Koad/Cornwall Koad & Cross Avenue	rnwall F	koad &	Cross	Avenu	Je	Upper Kerr VIIIage (8124-01)
	1	†	ţ	۶	*	
Lane Group	EBL	EBI	WBT	SBL	SBR	
Lane Group Flow (vph)	276	760	1365	9	438	
v/c Ratio	0.64	0.26	0.65	0.05	0.80	
Control Delay	25.3	3.7	21.1	54.3	30.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	25.3	3.7	21.1	54.3	30.4	
Queue Length 50th (m)	29.5	21.0	120.8	5.6	21.2	
Queue Length 95th (m)	62.9	36.2	161.1	7.8	40.0	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	430	2924	2109	415	859	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.26	0.65	0.02	0.51	
Intersection Summary						

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HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

Mail No.								
figurations figurations figurations figurations with the figurations of the figurations of the figurations of the figuration (with) 266 730 1295 15 10 420 420 420 420 1900 1900 1900 1900 1900 1900 1900 19	Movement	EBF	EBT	WBT	WBR	SBL	SBR	
lume (vph) 265 730 1295 15 10 420 lume (vph) 265 730 1295 15 10 420 lume (vph) 1900 1900 1900 1900 1900 1900 lume (vph) 1900 1900 1900 1900 1900 1900 lume (vph) 1900 1900 1900 1900 1900 1900 lume (vph) 100 0.95 0.95 0.95 0.00 0.08 lume (vph) 100 0.95 0.95 0.00 0.00 lume (vph) 100 0.95 0.90 0.00 0.00 lume (vph) 100 0.95 0.90 0.00 0.00 lume (vph) 100 0.95 0.90 0.00 0.00 lume (vph) 100 0.90 0.90 0.00 0.00 lume (vph) 100 0.90 0.90 0.90 0.90 lume (vph) 100 0.90 0.90 0.90 0.90 0.90 0.90 lume (vph) 100 0.90 0.90 0.90 0.90 0.90 0.90 lume (vph) 100 0.90 0.90 0.90 0.90 0.90 0.90 lume (vph) 100 0.90 0.90 0.90 0.90 0.90 0.90 0.90	Lane Configurations	y -	₩	4₽		F	14.14	
lume (yth) 266 730 1295 15 10 420 v (ythp) 1900 1900 1900 1900 1900 1900 1900 v (ythp) 6 0 6 6 6 8 5.8 5.8 5.8 Factor 1.00 0.95 0.95 1.00 0.88 Lino 1.00 1.00 1.00 1.00 1.00 0.85 lino 1.00 1.00 1.00 1.00 0.85 1.00 v (prat) 1.00 1.00 1.00 1.00 0.95 1.00 v (prat) 1.00 3.61 3.67 1.805 2.733 r (prat) 2.06 3.610 3.67 1.00 0 0 0 2.70 r (prat) 2.06 3.610 3.67 1.00 0 0 0 0 2.70 r (prat) 2.06 3.610 3.67 1.00 1.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (vph)	265	730	1295	15	10	420	
time (s) 6.0 6.6 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8	Future Volume (vph)	265	730	1295	15	10	420	
Feator 100 6.6 6.6 5.8 5.8 5.8	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Factor 1.00 0.95 0.95 1.00 0.88 Factor 1.00 1.00 1.00 0.088 Finders 1.00 1.00 1.00 1.00 0.088 Finders 1.00 1.00 1.00 1.00 0.085 Finders 1.00 1.00 1.00 0.095 1.00 Finders 1.00 1.00 1.00 1.00 1.00 1.00 1.00 Finders 1.00 1.00 1.00 1.00 Finders 1.00	Total Lost time (s)	0.9	9.9	9.9		2.8	5.8	
Direct	Lane Util. Factor	0.0	0.95	0.95		1.00	0.88	
ted (horse) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Frpb, ped/bikes	9.	1.00	1.00		1.00	1.00	
ted (not) 1.00 1.00 0.85 w (pard) 1703 3610 3667 1905 0.85 treductor (pard) 1.00 1.00 0.96 1.00 w (pard) 1.00 1.00 0.96 0.96 0.96 w (pard) 2.76 760 1349 16 10 438 buildes (%) 6% 0% 1% 0% 0% 4% buildes (%) 6% 0% 1% 0% 0% 10 168 buildes (%) 6% 0% 1% 0% 0% 4% buildes (%) 6% 0% 1% 0% 0% 1% 0% 0% buildes (%) 6% 0% 1% 0% 0% 1% 0% 0% buildes (%) 6% 0% 1% 0% 0% 1% 0% buildes (%) 6% 0% 1% 0% 0% 1% 0% carbon (pard) 2.00 1% 0.00 1% carbon (pard) 3.5 5.0 5.0 3.0 3.0 carbon (pard) 2.24 2.09 18 5.8 5.8 carbon (pard) 2.44 3.2 18 5.6 0.05 belay, d1 2, 44 3.2 18 5.6 0.05 belay, d2 3.4 0.2 1.5 0.1 3.8 carbon (pard) 2.34 0.2 1.5 0.1 3.8 carbon (pard) 2.35 1.00 1.00 1.00 1.00 carbon (pard) 2.35 1.40 0.55 carbon (pard) 2.35 1.40 0.55 carbon (pard) 2.35 1.40 0.50 carbon (pard) 2.44 3.2 1.5 5.0 6.40 carbon (pard) 2.44 3.2 1.6 5.0 6.40 carbon (pard) 2.44 3.2 1	Flpb, ped/bikes	1:00	1.00	1.00		1.00	1.00	
ted (hord) 1035 1100 100 0.95 1100 (hord) 1703 3610 3667 1805 2733 (hord) 1805 273 (hord) 2	Ē	1.00	1.00	1.00		00	0.85	
w (prot) 1703 3810 3867 1805 2733 ted 0.12 100 100 0.95 100 (wpm) 206 3810 3867 1805 2733 rector, PHF 0.96 0.96 0.96 0.96 0.96 0.96 (wph) 276 760 1349 16 10 438 duction (wph) 276 760 1365 0 0 270 bindes (%) 6% 0% 1% 0% 4% bindes (%) 6% 0% 1% 0% 4% Phases 5 6 6 6 6 6 Green (%) 134 1134 82.8 14.2 4 4 Phases 5 6 <td>Fit Protected</td> <td>0.95</td> <td>1.00</td> <td>1.00</td> <td></td> <td>0.95</td> <td>1.00</td> <td></td>	Fit Protected	0.95	1.00	1.00		0.95	1.00	
tied (vph) 206 3610 3677 1895 7100 (vph) 206 3610 3607 1895 733 (vph) 206 3610 3607 1895 733 (vph) 206 3610 360 0.96 0.96 0.96 0.96 0.96 (vph) 276 760 1349 16 10 438 (vph) 276 760 1349 16 10 438 (vph) 276 760 1365 0 10 168 (vph) 276 760 1365 0 10 142 (vph) 276 282 14.2 14.2 (vph) 276 282 14.2 14.2 (vph) 276 282 10 0 10 0.10 0.10 0.10 0.10 0.10 0.10	Satd. Flow (prot)	1703	3610	3567		1805	2733	
w (perm) 206 3610 3567 1805 2733 (reform) 206 3610 3567 1805 2733 (reform) 276 750 1396 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.	Fit Permitted	0.12	1.00	1.00		0.95	1.00	
retor, PHF 0.96 0.96 0.96 0.96 0.96 0.96 (vph) 276 760 1365 0 0 0 270 0 0 270 0 0 0 0 270 0 0 0 0 0	Satd. Flow (perm)	506	3610	3567		1805	2733	
(vph) 276 760 1349 16 10 438 duction (vph) 276 760 1365 0 0 270 4s, (#Inv) 5 76 1365 0 0 270 4s, (#Inv) 5 76 1365 0 0 270 5 hindes (%) 6% 0% 1% 0% 0% 4% Phases 5 6% 0% 1% 0% 4% Phases 5 6 6 6 6 6 6 Phases 134 1134 82.8 14.2 14.2 4 Green (5) 1134 1134 82.8 14.2 14.2 4 Green (6) 1134 1134 82.8 14.2 14.2 4 Green (6) 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96:0	
up Flow (yph) 0 0 0 0 270 up Flow (yph) 76 760 1365 0 10 168 biddes (%) 6% 0% 1% 0% 0% 4% biddes (%) 134 134 134 828 142 142 Green, G (s) 1134 1134 134 828 142 142 Green, G (s) 1134 1134 134 828 142 142 Green, G (s) 1134 1134 134 828 142 142 Green, G (s) 1134 1134 138 828 142 142 Green, G (s) 1134 134 828 142 142 Green, G (s) 1134 134 828 142 142 Green, G (s) 134 135 5.0 5.0 Green, G (s) 134 135 5.0 5.0 Green, G (s) 134 134 828 143 143 143 143 143 143 143 143 143 143	Adj. Flow (vph)	276	760	1349	16	9	438	
thicker (vph) 276 760 1365 0 10 168 68 44 48 69 69 69 69 69 69 69 69 69 69 69 69 69	RTOR Reduction (vph)	0	0	0	0	0	270	
thides (%) 6% 0% 1% 0% 0% 4% hides (%) 6% 0% 1% 0% 0% 4% Phases 5 2 6 4 4 Phases 5 2 6 4 4 Phases 5 2 6 4 4 Phases 6 2 6 4 4 Phases 6 2 6 4 4 Phases 6 2 6 4 4 Phases 7 13.4 13.4 82.8 14.2 14.2 Green, (s) 113.4 113.4 82.8 14.2 14.2 g/C Ratio (s) 113.4 113.4 82.8 14.2 14.2 g/C Ratio (s) 113.4 113.4 82.8 14.2 14.2 g/C Ratio (s) 6 6 6 6 6 5 5.8 5.8 Activity (s) 3.5 5.0 3.0 Cap (vph) 429 2924 2109 183 277 Prot co.11 0.21 0.38 0.01 Cap (vph) 429 2924 2109 183 277 Prot co.11 0.21 0.38 0.01 Perm 0.041 0.21 0.38 0.01 Perm 0.041 0.20 0.65 0.61 Perm 0.041 0.00 0.00 0.00 0.00 0.00 Ital Delay, (s) 2.3 HCM 2000 Level of Service O'Control Delay (s) 140 0 Sum of lost time (s) 18 O'Control Delay (s) 146.0 0.05 O'Con	Lane Group Flow (vph)	276	760	1365	0	9	168	
hildes (%) 6% 0% 1% 0% 4% a pm-pt NA NA Prot Perm Phases 5 6 4 4 I-bhases 2 6 4 4 4 Green, G(s) 113,4 113,4 82,8 14,2 14,2 Axersion (s) 2,24 2,109 18,3 2,77 Prot Cap (vph) 429 292,4 2,109 18,3 2,77 Prot co.11 0.21 0.38 0.01 Perm co.41 0.22 0.65 0.65 0.61 Perm co.41 0.60 0.65 0.61 Perm co.41 0.60 0.60 0.60 Perm co.41 0.60 0.	Confl. Peds. (#/hr)	2			2			
Phases	Heavy Vehides (%)	%9	%0	%	%0	%0	4%	
Phases	Turn Type	pm+pt	ΑN	ΑĀ		Prot	Perm	
Phases 2	Protected Phases	2	2	9		4		
Green, G (s) 113.4 113.4 82.8 14.2 14.2 Green, G (s) 113.4 113.4 113.4 113.4 113.4 14.2 Green, G (s) 113.4 113.4 113.4 113.4 14.2 Green, G (s) 113.4 113.4 113.4 113.4 14.2 Attension (s) 3.5 5.0 5.0 3.0 3.0 Cap (vin) 429 292.4 109 183 277 Perm c.0.11 0.38 0.01 c.0.06 6.0<	Permitted Phases	2					4	
Green, g(s) 1134 1134 82.8 144.2 14.2 44.2 44.2 44.2 44.2 44.2 44.	Actuated Green, G (s)	113.4	113.4	82.8		14.2	14.2	
gC Ratio 0.81 0.81 0.59 0.10 0.10 s Time (s) 6.0 6.6 6.6 5.8 5.8 Cap (vph) 429 2924 2109 183 277 Cap (vph) 429 2924 2109 183 277 Prot 0.011 0.21 0.38 0.01 Perm 0.041 0.26 0.65 0.05 0.61 Delay, d1 24,4 3.2 18.9 5.68 60.2 on Facbr 1.00 1.00 1.00 1.00 1.00 Istal Delay, d2 3,4 0.2 1.5 0.1 3.8 Delay (s) 3,4 0.2 1.5 0.0 4.0 Service C A C E E Delay (s) 4,2 0.5 6.3 8 Incompany C C A C E E O'Volume to Capacity ratio 0.65 O'Volume to Capacity ratio 0.65 O'Volume to Capacity validation 0.65 Discreption 0.65 O'Volume to Capacity Utilization 1.46% ICU Level of Service 1.46% ICU ICu Level of Service 1.46% ICU ICu ICu Service 1.46% ICU ICu ICu ICu Service 1.46% ICU	Effective Green, g (s)	113.4	113.4	82.8		14.2	14.2	
Service Serv	Actuated g/C Ratio	0.81	0.81	0.59		0.10	0.10	
Attension (s) 3.5 5.0 5.0 3.0 3.0 Cap (vph) 429 2924 2109 183 277 Perr c.0.11 0.38 0.01 0.01 Perr c.0.41 0.28 0.01 0.00 Alex, d.1 0.44 0.26 0.65 0.05 Alex, d.1 1.00 1.00 1.00 1.00 1.00 Alex, d.1 3.2 1.89 56.8 60.2 0.61 0.01 Alex, d.2 1.5 0.1 3.8 0.0 1.00	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
Cap (vph) 429 2824 2109 183 277 Proft c0.11 0.21 0.38 0.01 Perm c0.41 0.21 0.38 0.01 Perm c0.44 0.26 0.65 0.05 0.61 Perm 0.64 0.26 0.65 0.05 0.61 Perm 0.64 0.26 0.65 0.61 0.01 1.00 Perly 1.00	Vehide Extension (s)	3.5	5.0	5.0		3.0	3.0	
Prot c0.11 0.21 0.38 0.01 Perm c0.41 0.21 0.38 0.01 Delay, d1 24, 3.2 18.9 56.8 60.2 on Fachr 1.00 1.00 1.00 1.00 1.00 Ista Delay, d2 34 0.2 1.5 0.1 3.8 Everyide C A C E E E Delay (s) A C C E E O'Adume to Capacity ratio 0.65 O'Adume to Capacity valid 0.65 O'Adume to Capacity v	Lane Grp Cap (vph)	429	2924	2109		183	277	
Perm c0.41 0.66 0.65 0.06 0.06 0.06 0.06 0.06 0.06	v/s Ratio Prot	c0.11	0.21	0.38		0.01		
belay, d1 2 6.6 6.5 0.65 0.61 belay, d1 2 4.4 3.2 18.9 56.8 6.0.2 tal Delay, d2 3.4 0.2 1.5 0.1 3.8 tal Delay, d2 3.4 0.2 1.5 0.1 3.8 Ender C A C E E Delay (s) 20.5 6.3 E I COS C C C C C C C C C C C C C C C C C C	v/s Ratio Perm	c0.41					90:00	
belay, d1 24.4 3.2 18.9 56.8 60.2 on Factor 1.00 1.00 1.00 1.00 Ital Delay, d2 3.4 20.5 57.0 64.0 service C A C E E E LOSS A C E E O Control Delay S A C C E O Control Delay A C C E O Volume to Capacity ratio C 6.5 O Volume to C 6	v/c Ratio	0.64	0.26	0.65		0.05	0.61	
on Factor 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	Uniform Delay, d1	24.4	3.2	18.9		26.8	60.2	
Ital Delay, d2 34 0.2 1.5 0.1 3.8 Service	Progression Factor	1.00	1:00	1:00		1.00	1.00	
Service	Incremental Delay, d2	3.4	0.2	7.		0.1	3.8	
C A C E E 9.9 20.5 63.8 A C E 10.0 23.5 HCM 2000 Level of Service 140.0 Sum of lost time (s) 146.0 ICU Level of Service 146.0 ICU Level of Service 146.0 ICU Level of Service	Delay (s)	27.9	3.4	20.5		22.0	64.0	
y y y y alay 23.5 HCM 2000 Level of Service Capacity ratio 0.65 HCM of lost time (s) 140.0 Sum of lost time (s) 18 Utilization 74.6% ICU Level of Service 18	Level of Service	ပ	∢	ပ		ш	ш	
A C E y 23.5 HCM 2000 Level of Service capacity ratio 0.65 Utilization 74.6% ICU Level of Service 16	Approach Delay (s)		9.9	20.5		63.8		
elay 23.5 HCM 2000 Level of Service 0.65 Capacity ratio 0.65 Sum of lost time (s) 140.0 Sum of lost time (s) 18 Utilization 74.6% ICU Level of Service 1.6	Approach LOS		∢	O		ш		
elay 23.5 HCM 2000 Level of Service Capacity ratio 0.65 0.65 In (s) 1.40.0 Sum of lost time (s) 18 Utilization 74.6% ICU Level of Service 16	Intersection Summary							
Capacity ratio 0.65 Sum of lost time (s) 18 In (s) 140.0 Sum of lost time (s) 18 Utilization 74.6% ICU Level of Service 15 15 ICU Level of Service	HCM 2000 Control Delay			23.5	보	3M 2000 I	Level of Service	O
h (s) 140.0 Sum of lost time (s) 18 Utilization 74,6% ICU Level of Service 15 ICU Level of Service	HCM 2000 Volume to Capa	city ratio		0.65				
Utilization 74.6% ICU Level of Service	Actuated Cycle Length (s)			140.0	Su	ım of lost	time (s)	18.4
Ť.	Intersection Capacity Utiliza	ıtion		74.6%	⊇	U Level o	f Service	Q
	Annual Comment							

With Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

lotal PM (Phase 1)	Upper Kerr Village (8124-01)	
Future Lots	Upper	

FeI		1	†	>	>	Ļ	1	✓	←	•	۶	→	*
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10 0 10 10 0 30 5 515 10 20 Stop 0 10 10 0 30 5 515 10 20 Stop 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	nfigurations		4			4			4			4	
10 0 10 10 0 30 5 515 10 20 Stop	lume (veh/h)	9	0	9	9	0	8	2	515	10	20	640	25
Stop Stop Stop Free O.86 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.9	lume (Veh/h)	9	0	9	9	0	၉	2	515	9	50	640	25
0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	trol		Stop			Stop			Free			Free	
0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35			%0			%0			%			%0	
11 0 11 11 0 32 5 542 11 21 0 36 36 36 11 1 1 1 1 1 1 1 1 1 1 2 1 1 1 1 1 1 1	ır Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
20 30 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	w rate (vph)	Ξ	0	Ξ	Ξ	0	35	2	245	Ξ	51	674	56
3.6 3.6 None None None None None None None None	ns		20			30						2	
11 11 111 2	th (m)		3.6			3.6						3.6	
None	(s/w) peeds		-			7:						- -	
None 134 1342 707 1328 1350 582 720 583 134 1342 707 1328 1350 582 720 583 7.1 7.0 6.2 7.1 6.5 6.2 4.3 4.1 3.5 4.5 3.3 3.5 4.0 3.3 2.4 2.2 8.1 100 98 92 100 94 99 99 98 126 124 452 135 150 507 747 989 11 11 25 11 26 11 11 5 21	lockage		2			က						0	
None 0.80 0.80 0.77 0.80 0.80 0.77 0.80 0.80 0.94 0.77 1328 1350 1362 7.1 7.0 8.2 14.1 3.5 4.5 3.3 3.5 4.0 3.5 4.1 4.1 3.5 4.1 4.1 3.5 4.1 4.1 3.5 4.1 4.1 3.5 4.1 4.1 4.1 4.1 4.1 4.1 4.1 4	flare (veh)												
0.89 0.89 0.77 0.80 0.80 0.94 0.77 0.94 1344 1342 707 1328 1350 582 720 583 1344 1342 707 1328 1350 582 720 583 135 120 0.94 0.77 0.80 0.80 0.94 0.77 0.80 0.80 0.94 0.77 0.80 0.80 0.94 0.77 0.80 0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.9	ed								None			None	
0.80 0.80 0.77 0.80 0.80 0.94 0.77 238 0.94 1342 707 1328 1350 582 720 583 583 134 1342 707 1328 1350 582 720 582 720 583 583 7.1 7.0 6.2 7.1 6.5 6.2 4.3 4.1 4.1 5.2 4.2 135 150 507 747 399 122 4.3 588 721 6.5 6.2 4.3 4.1 5.2 4.3 5.8 721 6.5 6.2 4.3 6.8 6.2 4.3 4.1 4.1 5.2 7.1 6.5 6.2 4.3 6.8 6.2 4.3 4.1 4.1 5.2 7.1 6.5 6.2 4.3 6.8 721 6.1 6.1 6.1 6.1 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2 6.2	orage veh)												
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1344 1342 707 1328 1350 562 720 1130 1129 466 1110 1138 522 483 7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 91 100 98 92 100 94 99 126 124 4.52 135 150 507 747 22 43 568 721 11 11 5 21 11 32 11 26 197 297 747 939 0.11 0.14 0.01 0.02 2.8 38 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.7 0.6 94 99 99 90 90 90 90 90 90 90 90 90 90 90 90 9	on unblocked	0.80	0.80	0.77	0.80	0.80	0.94	0.77			0.94		
1130 1129 466 1110 1138 522 483 7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 91 100 98 92 100 94 99 126 124 452 135 150 507 747 EBJ WBJ NBJ SBJ 11 1 15 21 11 32 11 26 11 0.14 0.01 0.02 2.8 38 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.7 14 14 14 14 14 14 14 14 14 14 14 14 14	cting volume	1344	1342	707	1328	1350	582	720			583		
1130 1129 466 1110 1138 522 483 7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 91 100 98 92 100 94 99 126 124 452 135 150 507 747 EB1 WB1 NB1 SB1 22 43 558 721 11 11 5 21 11 11 5 21 11 32 11 26 11 32 11 26 11 32 11 26 11 0.04 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A 25.6 19.2 0.2 0.6 D C A A A A A 25.6 19.2 0.2 0.6 D C A A A A A 25.6 19.2 0.2 0.6 D C A A A A A 25.6 19.2 0.2 0.6 D C A A A A A 25.6 19.2 0.2 0.6 D C A A A A A 25.6 19.2 0.2 0.6 D C A A A A A 25.6 19.2 0.2 0.6 D C A A A A A A 25.6 19.2 0.2 0.6 D C A A A A A A 25.6 19.2 0.2 0.6 D C A A A A A A A A A A A A A A A A A A	e 1 conf vol												
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3.5 4.5 3.3 3.5 4.0 3.3 2.4 99 126 126 124 452 135 150 507 747 99 122 43 588 721 11 12 22 43 588 721 11 32 11 26 1	(s)	7.1	7.0	6.2	7.1	6.5	6.2	4.3			4.1		
3.5 4.5 3.3 3.5 4.0 3.3 2.4 1.0 98 92 100 94 99 1.0 10 98 92 100 94 99 1.0 124 452 135 150 507 747 2.2 43 558 721 1.1 11 5 21 1.1 26 1.1 32 74 36 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6	(s) e												
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126 124 452 135 150 507 747 EB1 WB1 NB1 SB1 22 43 588 721 11 12 58 721 11 32 747 939 0.11 0.14 0.01 0.02 28 8 0.2 0.6 D	free %	9	100	8	92	100	ᆶ	8			86		
EB1 WB1 SB1 22 43 558 721 11 13 52 721 11 32 11 26 197 297 747 939 0.11 0.14 0.01 0.02 2.8 8 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.7 A A A A A A A A A A A A A A A A A A A	ity (veh/h)	126	124	452	135	120	202	747			939		
22 43 558 721 11 11 5 21 11 11 26 197 297 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 D C A A 2.6 19.2 0.2 0.6 D C A A 2.6 19.2 0.2 0.6 D C A A 2.6 19.2 0.5 1.4 ICU Level of Service	Lane #	EB 1	WB1	NB 1	SB 1								
11 11 5 21 11 32 11 26 197 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 D C A A A 2.56 19.2 0.2 0.6 D C A A 1.4 ICU Level of Service	otal	22	43	228	721								
11 32 11 26 197 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.56 19.2 0.2 0.6 D C A A A 2.56 19.2 0.2 0.6 D C A A A 1.4 ICU Level of Service	eft	=	=	2	77								
197 297 747 939 2.8 38 0.2 0.6 2.6 192 0.2 0.6 2.6 192 0.2 0.6 2.6 192 0.2 0.6 2.7 A A A 2.8 192 0.2 0.6 2.9 192 0.2 0.6 2.9 193 0.2 0.6 2.9 193 0.2 0.6 2.9 193 0.3 0	tight	Ξ	32	Ξ	56								
0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 25.6 19.2 0.6 D C A A 25.6 19.2 0.6 D C A A 1.4 ICU Level of Service		197	297	747	939								
28 38 02 0.5 256 19.2 0.2 0.6 D C A A 256 19.2 0.2 0.6 D C 14 Ilization 59.5% ICU Level of Service	o Capacity	0.11	0.14	0.01	0.02								
256 192 0.2 0.6 D C A A 256 19.2 0.2 0.6 D C 1.4 59.5% ICU Level of Service	ingth 95th (m)	2.8	3.8	0.2	0.5								
D C A A 25.6 19.2 0.2 0.6 D C 1.4 T 1.4 Evel of Service 15.5% ICU Level of Service 15.5%	elay (s)	25.6	19.2	0.2	9.0								
256 192 0.2 0.6 D C 1.4 I.4 ICU Level of Service 159.5% ICU Level of Service		_	ပ	⋖	∢								
D C 1.4 59.5% ICU Level of Service 15	Delay (s)	25.6	19.2	0.2	9.0								
1.4 59.5% ICU Level of Service 15	ros	٥	O										
1.4 59.5% ICU Level of Service 15	on Summary												
59.5% ICU Level of Service 15	Jelay			1.4									
	on Capacity Utilizal	ion		29.5%	⊴	J Level o	f Service			ш			
	Analysis Period (min)			15									

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With Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total PM (Phase 1)	Upper Kerr Village (8124-01)	
M Unsignalized Intersection Capacity Analysis	err Street & Elmwood Road	

Movement	EBF	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	>			₩	æ		
Traffic Volume (veh/h)	15	10	2	510	009	40	
Future Volume (Veh/h)	15	10	2	510	009	40	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	16	11	2	537	632	42	
Pedestrians	33						
Lane Width (m)	3.6						
Walking Speed (m/s)	7:						
Percent Blockage	က						
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	98.0	0.81	0.81				
vC, conflicting volume	1235	889	209				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	939	496	522				
tC, single (s)	6.4	6.3	4.3				
tC, 2 stage (s)							
F(s)	3.5	3.4	2.4				
p0 queue free %	83	97	66				
cM capacity (veh/h)	243	437	751				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	27	542	674				
Volume Left	16	2	0				
Volume Right	£	0	45				
SH	297	751	1700				
Volume to Capacity	0.09	0.01	0.40				
Queue Length 95th (m)	2.3	0.2	0.0				
Control Delay (s)	18.3	0.2	0.0				
Lane LOS	O	∢					
Approach Delay (s)	18.3	0.2	0.0				
Approach LOS	O						
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization	ation		44.2%	2	U Level o	ICU Level of Service	A
				1.			

With Kerr St Improvements BA Group - EFS

Timings
Future Total PM (Phase 1)
9: Kerr Street & Stewart Street
Upper Kerr Village (8124-01)

→ •	SBL SBT	€	55 490	55 490	pm+pt NA		9	1 6		6.0 24.0			9	7.0 39.6			0.0	5.4	Lead	Yes	3.0 4.0		0.0 0.0		None C-Min	10.0	14.0	35				
—	NBT	4	390	330	ΑN	2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				
✓	NBL		9	10	Perm		2	2			32.0								Lag								14.0	32				
Ļ	WBT	€‡	15	15	ΑN	80		œ		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	70				
\	WBL		10	10	Perm		∞	∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				
†	EBT	4	9	10	ΑN	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				
4	EBL		20	20	Perm		4	4					-	24.6							4.0	3.0	0.0	0.0	None	10.0	13.0	20				
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Lenath: 75	Actuated Cycle Length: 75	

Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street & Stewart Street

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With Kerr St Improvements

Synchro 11 Report

BA Group - EFS

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Queues
Queeues
9: Kerr Street & Stewart Street

Lane Group	١		-	•	
	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	2	109	451	647	
v/c Ratio	0.29	0.29	0.35	0.54	
Control Delay	21.6	10.0	7.9	10.7	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	7.9	10.7	
Queue Length 50th (m)	8.5	3.4	18.6	32.3	
	16.5	13.0	55.3	98.2	
	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
	44	552	1297	1192	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.35	0.54	

With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

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Future Total PM (Phase 1) Upper Kerr Village (8124-01)

490 490 490 1900 0.99 0.99 1.00 0.99 1.00 0.99 1.00

Lane Configurations
Traffic Volume (vph)
Future Volume (vph)
Geat Flow (vpha)
Total Lost time (s)
Lane Uif Fador
Frb, pedbikes
Frb, pedbikes
Frt Protected
Sard. Flow (perm)
Fit Pemitted
Sard. Flow (perm)
RTOR Reduction (vph)
Lane Group Flow (vph)
Confl. Flow (vph)
Confl. Flow (vph)
Confl. Flow (vph)
Bus Blockages (#fr)

55 55 1900

15 1900

1000

15 1900

50

0.92 533 3 644 84 NA

0.92 60 0 0 1%

0.92 16 0 0 25 17%

1% 450 NA NA

0.92

0.92 82 0 0 2% 2%

0 0 15 %

20% NA 2

0.92 16 0 0 0%

0.92 0 0 20 2%

pm+pt

Perm

13% NA

Perm

e 1)	limings	10: Dorval Road & Wyecroft Road
	7	9

7 6	
ase	
P)	1
Total PM (Phase 1	>
a 5	1
Total	1
Future .	
Щ	

-	•	SBT	<u> ተ</u> ተጉ	1135	1135	ΑN	9		9		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0												
-	•	SBL	1	120	120	Prot	-		-		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None											Ì	404	S	₩ 08	
*	_	NBT	4413	1310	1310	≨	2		2		20.0	41.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0										f		4/
١,		NBL	r	95	92	pm+pt	2	2	2		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None												m		7	
•	/	WBR	¥C	485	485	vo+mq	-	∞	~		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							of Green				1	× 03	\$17	/ 07	210
1	,	WBT	*	90	90	ΑN	∞		∞		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				3T, Start								
ľ	*	WBL	×	909	09	pm+pt	က	∞	က		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SE			oft Road					
	Ť	EBT	4₽	220	220	Ϋ́	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				2:NBTL			& Wyecro					
•	\	EBL	1	382	382	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							d to phas		linated	10: Dorval Road & Wyecroft Road	1	2		8	
		Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Splits and Phases: 10: Doi	<u> </u>	12. (R)	1/8		170

0.56

6.2 0.6 0.6 6.9

0.25 0.36 5.1 1.00 0.8 5.9

0.03 0.16 26.2 1.00 0.4 26.5 C C C C C C C

C0.05 0.29 26.8 1.00 1.0 C C C C C C

> Progression Factor Incremental Delay, d2

Uniform Delay, d1

Level of Service Approach Delay (s) Approach LOS

Lane Grp Cap (vph)
v/s Ratio Prot
v/s Ratio Perm

51.0 51.0 0.68 5.4 4.0

51.0 51.0 0.68 5.4 4.0 4.0

13.2 13.2 0.18 5.4 4.0 267

13.2 0.18 5.4 4.0 232

Turn Type
Protected Phases
Permitted Phases
Actuated Green, G (s)
Effective Green, g (s)
Actuated g/C Ratio
Clearance Time (s)
Vehicle Extension (s)

With Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 21

13.8 D

Sum of lost time (s) ICU Level of Service

9.5 0.53 75.0 80.3%

HCM 2000 Control Delay HCM 2000 Volume to Capacity ratio

Actuated Cyde Length (s) Intersection Capacity Utilization Analysis Period (min) c Critical Lane Group

HCM 2000 Level of Service

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Queues 10: Dorva

10: Dorval Road & Wyecroft Road	Wyecro	ft Roa	_						Upper K	Upper Kerr Village (8124-01)
	4	†	>	ţ	4	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	BE	NBT	SBL	SBT	
Lane Group Flow (vph)	418	418	92	86	527	103	1467	130	1462	
v/c Ratio	0.98	0.57	0.22	0.47	0.89	0.42	0.85	0.18	0.64	
Control Delay	90.1	30.8	30.4	55.4	46.8	13.8	37.5	39.5	27.3	
Queue Delay	0.0	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	90.1	30.8	30.4	55.4	46.8	13.8	37.5	39.5	27.3	
Queue Length 50th (m)	51.2	30.1	11.0	21.9	89.9	8.2	135.2	12.6	91.3	
Queue Length 95th (m)	#82.7	45.1	19.8	36.6	127.6	m11.4 m#160.4	#160.4	21.8	126.8	
Internal Link Dist (m)		155.6		199.3			494.4		672.1	
Turn Bay Length (m)	115.0		145.0			65.0		125.0		
Base Capacity (vph)	428	1004	369	474	593	270	1735	705	2274	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.98	0.42	0.18	0.21	0.89	0.38	0.85	0.18	0.64	

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

Wolume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

Movement EBL EBT	EBR		TO/V	9	i di	NBT	OBN	2	F	SBR
14		WBL \	- 0.	WBK	NBL	-		SBL	SBI	
385 220 386 220 1800 100 1900 100 100 094 100 094 100 094 100 094 100 094 100 094 100 094 100 095 100 095 100 095 100 095 100 095 100 096 100 096 1		<u>, </u>	*	¥.	r	4413		K.	4413	
385 220 1900 1900 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 1.00 0.94 1.00 0.94 0.95 1.00 3213 3234 0.92 0.92 418 239 0.92 0.92 418 239 0.92 0.92 418 239 0.92 0.92 418 239 0.92 0.92 418 239 0.92 0.92 418 239 0.92 0.92 0.13 0.19 5.0 7.0 5.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 8.93 44.6 8.93 44.6 8.93 44.6 8.93 44.6 8.93 44.6 8.93 44.6 8.94 44.6 8.95 44.6 8.96 94.6 8.96 94.6 8.97 44.12 8.97 44.12 8.97 44.6 8.98 68.9 8.98 44.6 8.98 68.9 8.98 68.98 68.9 8.98 68.98 68.9 8.98 68.98 68.9 8.98 68.98 68.9 8.98 68.9 8.98 68.9 8.98 68.9 8.98 68.9 8.98 68.9 8.98 68.98 68.98 68.98 68.98 68.98 68.98 68.98 68.98 68.98 68.98 68.98 6	165	09	90	485	92	1310	40	120	1135	210
1900 1900 1900 1900 1900 1900 1900 1900	165	09	8	482	92	1310	40	120	1135	210
5.0 7.0 0.97 0.95 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 0.99	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.97 0.95 1.00 0.94 1.00 0.94 0.95 1.00 0.94 0.95 1.00 3213 3234 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.93 0.94 4% 0.97 0.95 0.01 0.02 0.01 0.02 0.01 0.03 0.01 0.09 0.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
100 0.99 1.00 1.00 1.00 0.94 1.00 0.95 23.13 3234 0.95 1.00 0.92 0.92 418 239 0 2 29 1.00 1.00 1.00 22.6 1.60 22.6 1		1.00	1.00	1.00	1.00	0.91		0.97	0.91	
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1.00 0.94 0.95 1.00 3213 3224 0.95 1.00 3213 3234 418 239 0.92 4% 0 2 2 128 0.92 0.13 0.19 5.0 7.0 5.0 7.0 5.0 5.0 6.9		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
3213 3234 3234 3234 3234 3234 3234 3234		00.	1.00	0.85	1.00	1.00		0.1	88.0	
3213 3234 0.95 1.00 0.95 1.00 0.95 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0			1.00	1.00	0.95	1.00		0.95	1.00	
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3213 3234 0.92 0.92 418 290 1 1 1 9% 4% 9% 4% 9% 2 0 2 0 2 0 2 0 2 16.0 22.6 16.0 22.6 16.0 22.6 16.0 22.6 16.0 37.0 5.0 7.0 5.0 7			1.00	1.00	0.14	1.00		0.95	1.00	
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9% 4% 299 128 9% 4% 4% 9% 4% 4% 4% 4% 4% 4% 4% 4% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6%	0.92		0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
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h) 418 290 1 4% 9% 4% 0 2 0 2 Prot NA 7 4 16.0 22.6 16.0 22.6 17.0 0.19 17.0 0.19 17.0 0.10 17.0 0.10 17.0 0.10 18.0 37.4 41.6 19.0 1.00 10.0 1.00 1	0	0	0	22	0	က	0	0	17	0
9% 4% 0 2 4% 1 7 4 4 1 7 4 4 1 16.0 22.6 0.13 0.19 0.13 0.19 0.13 0.19 0.19 0.48 0.98 0.48 0.98 0.48 1.00 1.00 2.37 4 1.6 1.00 1.00 2.44.6 1.00 1.00 2.44.6 1.00 1.00 2.44.6 1.00 1.00 2.44.6 2.37 4 1.6 2.37 4 1.6 3.44.6 3.44.6 4.10 1.00 2.44.6 4	0	65	86	472	103	1464	0	130	1445	0
9% 4% 0 2 0 2 0 2 100 2 100 22.6 100 22	4	4		_	_		_	-		_
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es Prot NA es 7 4 es 7 6 9 es 1,6 (s) 16,0 22,6 es 0.13 0.13 es 0.13 0.13 es 0.13 0.13 ev) 5,0 5,0 5,0 ev) 6,0 5,0 6,0 ev) 7,0 1,0 0,0 ev) 7,1 1,2 1,2 ev) 8,2 44,6 ev) 8,2 37,4 1,2 ev) 8,2 44,6 ev) 8,2 37,4 1,2 ev) 8,2 44,6 ev) 8,2 37,4 1,2 ev) 8,2 44,6 ev) 8,2 44,6 ev) 8,2 44,6 ev) 8,2 8,2 44,6 ev) 9,0 8,0 8,2 ev) 9,0 9,0 9,0 9 ev) 10,0 0,0 0,0 0 ev) 10,0 0 ev) 10,0 0 ev) 10,	0	0	0	0	0	3	0	0	0	0
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atio 0.13 0.19 (s) 5.0 7.0 (vph) 428 609 (vph) 428 609 (vph) 428 609 (vph) 6.0.13 0.09 (d1 5.18 43.4 (d1 5.18 43.4 (d2 37.4 1.2 (extra 1.00 1.00 (extra 1.00 1.		24.6	15.6	39.8	51.1	40.2		24.2	53.5	
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c0.13 0.09 d1 6.18 43.4 ctor 1.00 1.00 lay, d2 37.4 1.2 89.2 44.6 9 (5) F D y (s) E mmary trol Delay tron Delay tron Delay tron Delay are to Capacity ratio lay(1) (2) 86.9 E mmary are to Capacity ratio backy Utilization 8		257	224	527	240	1688		902	2214	
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43.4 1.00 1.00 1.00 1.2 44.6 66.9 E		0.25	0.44	0.90	0.43	0.87		0.18	0.65	
0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.		39.4	48.2	38.1	21.4	37.4		39.7	26.0	
44.6 44.6 6.9 E		1.00	1.00	1.00	0.77	0.30		1.00	1.00	
44.6 66.9 E		[-	2.8	18.7	4.	3.6		0.3	1.5	
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			۵			Ω			ပ	
	41.7	HCH	1 2000 1	HCM 2000 Level of Service	ervice		_			
~	0.90						ı			
	120.0	Sum	Sum of lost time (s)	ime (s)			24.0			
	83.6%	<u></u>	Level of	ICU Level of Service			ш			
Analysis Period (min)	15									
c Critical Lane Group										

With Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 23

With Kerr St Improvements BA Group - EFS

HCM Unsignalized Inte 11: Speers Road & Inte

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

Analysis	
in Capacity	terim Connection
Intersection	& Interim Co
//> // Unsignalized Intersection Capacity Analysis	Speers Road &
5	ഗ്

																											2								_					
`	SBR	*-	42	45			0.92	49	2								0.80	630			26	6.9		3.3	8	808	SB 1 SB 2	,	33 0				2.8 1.5		S	13.4	В			
۶	SBL	<u>_</u>	93	30	Stop		0.92	33	3										1226	236	1284	8.9	2.8	3.5		292	WB2 S	468	0		1700		0.0							
4	WBR		92	92			0.92	7	:																		WB1	793	0	0	1700	0.47	0.0	0.0		0.0				
ţ	WBT	₩	1095	1095	Free	%0	0.92	1190	3					TWLTL	2	162											EB3	438	0	0	1700	0.26	0.0	0.0					0.7	
†	EBT	‡	802	802	Free	%0	0.92	875	5					TWLTL TWLTL	2	73											EB2	438	0	0	1700	0.26	0.0	0.0						
1	盟	je.	45	45			0.92	49	2								0.80	1261			839	4.1		2.2	35	647	EB 1	49	49	0	647	0.08	1.9	11.0	മ	9.0				
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	

Synchro 11 Report Page 25 With Kerr St Improvements BA Group - EFS

Timings 14: Kerr Street & Rail Track

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	←	→		
Lane Group	NBT	SBT	94	
Lane Configurations	+	+		
Traffic Volume (vph)	675	009		
Future Volume (vph)	675	009		
Turn Type	Ϋ́	ΑN		
Protected Phases	2	9	4	
Permitted Phases				
Detector Phase	2	9		
Switch Phase				
Minimum Initial (s)	2.0	2.0	2.0	
Minimum Split (s)	22.0	22.0	22.0	
Total Split (s)	140.0	140.0	40.0	
Total Split (%)	77.8%	77.8%	25%	
Maximum Green (s)	138.0	138.0	38.0	
Yellow Time (s)	2.0	2.0	2.0	
All-Red Time (s)	0.0	0.0	0.0	
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	2.0	2.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	
Recall Mode	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	
Intersection Summary				
Cycle Length: 180				
Actuated Cycle Length: 180				
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	phase 2:1	VBT and 6	:SBT, Sta	rt of Green
Natural Cycle: 50				
Control Type: Pretimed				

Ø2 (R) ▼ Ø6 (R)

Splits and Phases: 14: Kerr Street & Rail Track

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Synchro 11 Report Page 26 With Kerr St Improvements BA Group - EFS

Queues			Future Total PM (Phase 1)
14: Kerr Street & Rail Track	ail Trac	>	Upper Kerr Village (8124-01)
	-	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	703	625	
v/c Ratio	0.49	0.43	
Control Delay	9.5	8.4	
Queue Delay	53.0	0:0	
Total Delay	62.1	8.4	
Queue Length 50th (m)	85.4	71.2	
Queue Length 95th (m)	107.7	90.5	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1442	
Starvation Cap Reductn	840	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.17	0.43	
Intersection Summary			

Synchro 11 Report Page 27 With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	1	†	1	-	ļ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	675	0	0	009	0
Future Volume (vph)	0	0	0	0	0	0	0	675	0	0	009	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			5.0	
Lane Util. Factor								1.00			1.00	
Ŧ								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1881			1881	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1881	
Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	703	0	0	625	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	703	0	0	625	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	1%	%0
Turn Type								W			NA	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1442	
v/s Ratio Prot								c0.37			0.33	
v/s Ratio Perm												
v/c Ratio								0.49			0.43	
Uniform Delay, d1								7.8			7.3	
Progression Factor								1.00			0.0	
Incremental Delay, d2								1.2			1:0	
Delay (s)								0.0			œ.	
Level of Service								∢			∢	
Approach Delay (s)		0.0			0:0			9.0			œ .3	
Approach LOS		∢			⋖			⋖			⋖	
Intersection Summary												
HCM 2000 Control Delay			8.7	¥	M 2000 I	HCM 2000 Level of Service	ervice		∢			
HCM 2000 Volume to Capacity ratio	ity ratio		0.38									
Actuated Cycle Length (s)			180.0	Su	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	ion		38.9%	ੁ	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									
 Critical Lane Group 												

With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kert Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

																																								A	
																											SB 2	300	0	133	1700	0.18	0.0	0.0							
•	SBR		125	2		000	まご	133																			SB 1	333	0	0	1700	0.20	0.0	0.0		0:0				f Service	
→	SBT	₽	470	4/0	9 2	%0	ま。 う	200						None													NB 3	168	0	0	1700	0.10	0.0	0.0						ICU Level of Service	
←	NBT	*	315	S 5	8 8	%0	\$ O	332						None													NB 2	168	0	0	1700	0.10	0.0	0.0						೦	
•	NBL	<u>.</u> -	90	<u> </u>		000	ま.O.	202										633			633	4.1		2.2	20	946	NB 1	202	202	0	946	0.21	6.1	8. 8.	∢	3.7			2.5	40.8%	15
<i>></i>	EBR	*-	88	8		000	ま ご	6										316			316	7.0		3.3	87	9/9	EB2	06	0	6	9/9	0.13	3.5	1.1	В						
1	EBF	<u></u>	ις i	0,400	or year	80 6	ま .つ	2										1138			1138	9.9		3.5	26	156	EB 1	2	2	0	156	0:03	0.8	28.9	۵	12.1	മ			on	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future volume (ven/n)	Sign Control	Grade Dook Hour Footor	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	HSO	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

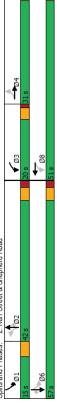
Synchro 11 Report Page 1 Without Kerr St Improvements BA Group - EFS

Timings 2: Kerr Street & Shepherd Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

MBT NBT NBR SBL 1		-	Ļ	—	•	۶	→		
trions	Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	04	
(vph) 115 0 280 70 90 410 (vph) 115 0 280 70 90 410 410 mm+pt NA ess 3 2 1 1 6 ess 8 2 2 2 1 1 6 ess 9 30 410 mm+pt NA ess 9 2 2 1 1 6 ess 9 2 2 2 1 1 6 ess 9 2 2 2 2 1 1 6 ess 9 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Lane Configurations	*	Ŷ,	‡	*	F	‡		
(vph) 115 0 280 70 90 410 eses 8 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Traffic Volume (vph)	115	0	280	02	90	410		
eses 8 2 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Future Volume (vph)	115	0	280	20	90	410		
ese 3 8 2 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Turn Type	pm+pt	ΑĀ	Ϋ́		pm+pt	₹		
(s) 5.0 18.0 18.0 18.0 18.0 (s) 2.0 1 1 6 (s) 2.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	Protected Phases	က	∞	2		~	9	4	
(s) 5.0 5.0 18.0 18.0 7.0 18.0 2.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 28.2 11.0 28.2 28.2 28.2 28.2 28.2 28.2 28.2 28	Permitted Phases	∞			2	9			
(s) 5.0 5.0 18.0 18.0 7.0 18.0 (s) 9.0 22.0 28.2 28.2 110 28.2 28.2 28.2 110 28.2 28.2 28.2 28.2 28.2 28.2 28.2 28.	Detector Phase	က	∞	2	2	~	9		
(s) 5.0 5.0 18.0 7.0 18.0 (s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	Switch Phase								
(s) 9.0 22.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 51.0 51.0 47.0 36.2 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.9% 38.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Minimum Initial (s)	2.0	5.0	18.0	18.0	7.0		2.0	
18.5% 47.2% 38.9% 43.9% 57.0 18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 18.5% 40 40 40 60 60 60 19.5% 40 40 60 60 60 19.5% 40 40 5.2 5.2 40 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 5.2 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 5.2 5.2 4.0 19.5% 40 4.0 4.0 5.2 5.2 19.5% 40 4.0 4.0 5.2 5.2 19.5% 40 4.0 4.0 5.2 5.2 19.5% 40 4.0 4.0 4.0 4.0 19.5% 40 4.0 4.0 4.0 4.0 19.5% 40 4.0 4.0 4.0 19.5% 40 4.0 4.0 4.0 19.5% 40 4.0 4.0 4.0 19.5% 40 4.0 4.0 4.0 19.5% 40 4.0 4.0 19.5% 40 4.0 4.0 19.5% 40 4.0 4.0 19.5% 40 4.0 4.0 19.5% 40 4.0 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40 4.0 19.5% 40	Minimum Split (s)	0.6	22.0	28.2	28.2	11.0		22.0	
18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 11.0 16.0 47.0 58.8 58.8 11.0 51.8 13.3 13.4 10.5 13.3 13.4 10.5 13.3 13.4 10.5 13.3 13.4 10.5 13.3 13.4 10.5 13.3 13.4 10.5 13.3 13.4 10.5 13.3 13.4 10.5 13.4	Total Split (s)	20.0	51.0	45.0	45.0				
(s) 160 470 36.8 36.8 11.0 518 3.3 3.3 3.4 3.3 3.3 4.0 3.3 3.6 3.3 4.0 3.3 3.4 (s) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Total Split (%)	18.5%	47.2%	38.9%	38.9%				
(s) 3.0 3.0 3.3 3.3 4.0 3.3 ((s) 1.0 1.0 1.0 1.9 1.9 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Maximum Green (s)	16.0	47.0	36.8	36.8				
(s) 1.0 1.0 1.9 1.9 0.0 1.9 (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Yellow Time (s)	3.0	3.0	3.3	3.3				
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	All-Red Time (s)	1.0	1.0	6.	6.				
40 4.0 5.2 5.2 4.0 5.2 Ves Lead Yes 3.0 3.0 3.5 3.5 2.5 3.5 3.5 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lost Time Adjust (s)	0.0	0.0	0.0	0.0				
Lead Lag Lag Lad V85 Y65 Y65 Y65 Y65 Y65 Y65 Y65 Y65 Y65 Y6	Total Lost Time (s)	4.0	4.0	5.2	5.2				
Yes Yes Yes Yes 3.0 3.0 3.6 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lead/Lag	Lead		Lag	Lag			Lag	
3.0 3.0 3.5 3.5 2.5 3.5 3.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
3.0 3.0 3.0 3.0 3.0 3.0 3.0 0.0 0.0 0.0	Vehide Extension (s)	3.0	3.0	3.5	3.5			3.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Gap (s)	3.0	3.0	3.0	3.0			3.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time Before Reduce (s)	0.0	0.0	0.0	0.0			0.0	
None None Min Min None Min N 7.0 10.0 10.0 10.0 11.0 13.0 13.0 13.0 0 5 5 5	Time To Reduce (s)	0.0	0.0	0.0	0.0			0.0	
7.0 10.0 10.0 10.0 10.0 11.0 13.0 13.0 13	Recall Mode	None	None	Min	Min			None	
11.0 13.0 13.0 13.0 0 13.0 0 13.0 13.0 1	Walk Time (s)		7.0	10.0	10.0		10.0	7.0	
0	Flash Dont Walk (s)		11.0	13.0	13.0		13.0	11.0	
Intersection Summary Cycle Length: 108 Actuated Cycle Length: 45.6 Natural Cycle: 75	Pedestrian Calls (#/hr)		0	2	2		2	0	
Cycle Length: 108 Actuated Cycle Length: 45.6 Natural Cycle: 75	Intersection Summary								
Aduated Oycle Length: 45.6 Natural Cycle: 75	Cycle Length: 108								
Natural Cycle: 75	Actuated Cycle Length: 45.6	"							
	Natural Cycle: 75								

2: Kerr Street & Shepherd Road Splits and Phases:



Without Kerr St Improvements BA Group - EFS

Queues Future Total AM (Phase 1)
2: Kerr Street & Shepherd Road Upper Kerr Village (8124-01)

2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
	>	ţ	←	*	٠	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	126	236	308	11	66	451	
v/c Ratio	0.40	0.34	0.21	0.11	0.14	0.21	
Control Delay	21.8	1.3	10.0	2.8	3.9	4.4	
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.1	
Total Delay	21.8	1.3	10.0	2.8	4.7	4.5	
Queue Length 50th (m)	9.3	0.0	8.5	0.0	2.4	2.9	
Queue Length 95th (m)	23.0	0:0	16.3	4.9	6.8	13.4	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	603	1513	2818	1218	780	3465	
Starvation Cap Reductn	0	0	0	0	473	1599	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.16	0.11	90:0	0.32	0.24	
Intercoction Cummany							

Without Kerr St Improvements
BA Group - EFS
Page 3

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

Control of the cont		1	†	~	-	Ļ	4	•	←	•	۶	→	*
three (pc) 0 0 115 0 215 0 280 70 90 410 forms (pc) 0 0 115 0 215 0 280 70 90 410 forms (pc) 0 0 115 0 215 0 280 70 90 410 forms (pc) 1 0 0 1 115 0 215 0 280 70 90 410 forms (pc) 1 0 0 1 115 0 1 100 1 1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
tume (aph) 0 0 115 0 215 0 280 70 90 410 tume (aph) 0 0 115 0 215 0 280 70 90 410 (kptph) 1 0 1 0 1 0 0 1 0 0 4 0 4 0 4 0 4 0 4 0 4 0 4 0 9 4 0 9 4 0 9 4 0 4 0 9 4 0 9 4 0 9 4 0 </td <td>Lane Configurations</td> <td>*</td> <td>£3</td> <td></td> <td>×</td> <td>43</td> <td></td> <td>K</td> <td>*</td> <td>æ</td> <td>*</td> <td>*</td> <td>*</td>	Lane Configurations	*	£ 3		×	43		K	*	æ	*	*	*
Ulme (vph) 0 0 115 0 215 0 280 70 90 410 Homes (vph) 1900	Traffic Volume (vph)	0	0	0	115	0	215	0	280	20	06	410	0
February 1900 190	Future Volume (vph)	0	0	0	115	0	215	0	280	70	90	410	0
Fedorary 100 140	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Freducy The color 100 100 0.95 100 0.95 Divises 1.00 1.00 1.00 1.00 1.00 1.00 0.95 Divises 1.00 0.95 1.00 1.00 1.00 1.00 1.00 Index 1.00 0.85 1.00	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Decides 100 0.97 100 1.00 1.00 100 1	Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
ted (horse) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Frpb, ped/bikes				1.00	0.97			1.00	0.97	1.00	1.00	
Total Control Delay	Flpb, ped/bikes				1.00	1.00			1.00	1.00	1:00	1.00	
read 0.95 1.00 <th< td=""><td>خ ا</td><td></td><td></td><td></td><td>1.00</td><td>0.85</td><td></td><td></td><td>1.00</td><td>0.85</td><td>9 5</td><td>0.5</td><td></td></th<>	خ ا				1.00	0.85			1.00	0.85	9 5	0.5	
March Marc	Fit Protected				0.95	1.00			1.00	1.00	0.95	1.00	
w (perm) 1274 1559 3497 1499 879 3505 febror, PHF 0.91	Satu. Flow (prot) Fit Permitted				0.73	1.00			1.00	1.00	0.47	0.1	
rictor, PHF 091 091 091 091 091 091 091 091 091 091	Satd. Flow (perm)				1274	1559			3497	1499	879	3505	
(vph) 0 0 126 0 236 0 308 77 99 451 up Flow (vph) 0 0 0 126 58 0 0 47 99 451 up Flow (vph) 0 0 0 126 58 5 5 5 5 5 5 5 5 6 0 0 40 0 0 451 3% 99 451 99 451 99 451 90 451 90 451 90 451 90 451 90 451 90 451 90 451 90 451	Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Authority (hgh) 0 0 178 0	Adj. Flow (vph)	0	0	0	126	0	236	0	308	77	66	451	0
up Flow (vph) 0 0 126 58 0 308 30 99 451 siclets (%) 0% </td <td>RTOR Reduction (vph)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>178</td> <td>0</td> <td>0</td> <td>0</td> <td>47</td> <td>0</td> <td>0</td> <td>0</td>	RTOR Reduction (vph)	0	0	0	0	178	0	0	0	47	0	0	0
Assist (#IIII) 5 3 5	Lane Group Flow (vph)	0	0	0	126	28	0	0	308	30	66	451	0
language (#Int)	Confl. Peds. (#/hr)	2		2	2		2		ě	2	2	ě	
Phrases (#Inf) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Heavy Vehicles (%)	%0	%0	%0	%	%	%0	%0	5%	2%	% "	%	%0
service Perm pm+pt NA NA Perm pm+pt NA NA Phases 4 3 8 2 2 1 6 Phases 4 8 2 2 6 1 1 6 1 1 6 1 1 6 1 1 6 6 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 7 7 7 6 6 7	Bus Blockages (#/hr)	0	0	0	0	2	0	0	9	0	0	0	0
Phases 4 3 8 2 1 Ghenses 4 3 8 2 2 6 Ghenses 4 8 2 2 2 6 Green, G(s) 12.4 12.4 12.4 19.4 19.4 28.7 2 Green, G(s) 12.4 12.4 12.4 19.4 19.4 28.7 2 6 2 2 4.0 2 3	Turn Type	Perm			pm+pt	≨		Perm	¥	Perm	pm+pt	ΑN	Perm
Princes 4 12,4 12,4 12,4 12,4 12,4 12,4 12,4 12	Protected Phases	•	4		က	_∞		c	2	c	← (9	(
Control Delay Control Dela	Permitted Phases	4			, c	40,		7	404	7 01	200	7 00	٥
Section Color Co	Adualed Green, G (s)				45.4	4.7			4.07	4.0	7.07	7.07	
Time (s) Artisted of Botio				4.7	4.7			4.6	4.6	7.07	7.07		
Accordate Acco	Clearing Time (2)				0.20	0.20			0.0	0.0	0.0	0.0	
Control Delay Control Dela	Vehicle Extension (s)				0.4	0.4			3.2	3.5	0.4	3.5	
Cap (vpr) Code (vp	Vellide Exterision (s)				0.0	2.0			2.0	2.0	5.7	2.00	
Proof	Lane Grp Cap (vpn)				36/	384			248	2/8	28/	1999	
Delay, d1	V/s Katio Prot				c0.05	0.04			0.09		0.02	S	
leay, d1	Ws Ratio Perm				0.04	710			0.03	0.02	000	0 23	
100 100	Uniform Delay, d1				15.5	14.8			10.4	20.0	5.1	5.3	
Service 0.6 0.2 0.1 0.0 0.1	Progression Factor				1.00	1.00			1.00	1.00	1.00	1.00	
16.0 15.0 10.5 9.7 5.2	Incremental Delay, d2				9.0	0.2			0.1	0.0	0.1	0.1	
0.0 15.4 10.4 A A B B B B A A A B B B B A A A B B B B B B B B A A B	Delay (s)				16.0	15.0			10.5	9.7	5.2	5.4	
0.0 15.4 10.4 A B B B 9.6 HCM 2000 Level of Service A 9.6 HCM 2000 Level of Service A 9.7 Service B 7.2 Service B 17.2 Service B 17.2 Service B	Level of Service				ш	ш			ω	¥	⋖	⋖	
A B B 9.6 HCM 2000 Level of Service A acity ratio 0.32 Sum of lost time (s) 17.2 zation 56.0% ICU Level of Service B	Approach Delay (s)		0.0			15.4			10.4			5.4	
9.6 HCM 2000 Level of Service 0.32 Sum of lost time (s) 50.3 OLU Level of Service 15	Approach LOS		A			В			ш			∢	
9.6 HCM 2000 Level of Service 0.32 Sum of lost time (s) 50.3 Surfort time (s) 156.0% ICU Level of Service 15	Intersection Summary												
0.32 0.32 n 50.3 Sum of lost time (s) zation 56.0% ICU Level of Service 15 15	HCM 2000 Control Delay			9.6	ĭ	3M 2000	Level of S	Service		⋖			
50.3 Sum of lost time (s) zation 56.0% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.32									
ilitzation 50,0% ICU Level of Service 15	Actuated Cycle Length (s)	-		50.3	ഗ	ım of lost	time (s)			17.2			
	Intersection Capacity Utilizar	IIOII		20.0%	2	n revel c	I Service			מ			
	Analysis Period (min)			2									

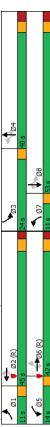
Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBL SB NBL NBT NBR SBL SB NBL NBT NBR SBL SBL SB NB NBL NBT NBR SBL SB NB NBL NBT NBR SBL SB NB		1	†	<i>></i>	-	↓	4	•	←	•	۶	→	*
March Marc	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
70 735 95 195 560 165 105 115 370 325 70 735 95 195 560 165 105 115 370 325 70 735 95 195 560 165 105 115 370 325 70 735 95 195 560 165 105 115 370 325 70 70 735 95 195 560 165 105 115 370 325 70 70 70 70 70 70 70 70 70 70 70 70 70	Lane Configurations	*	‡	*	<i>y</i> -	‡	*	*	*	*	*	*	¥.
March Marc	Traffic Volume (vph)	2	735	95	195	260	165	105	115	370	325	145	95
Pm+pt	Future Volume (vph)	02	735	92	195	260	165	105	115	370	325	145	95
1 6 5 2 7 4 3 1 6 6 5 2 7 4 4 8 1 6 6 5 2 7 7 4 4 3 1 6 6 5 2 2 7 7 4 4 3 1 0 250 250 70 250 250 70 100 343 343 343 1 0 320 303 100 303 100 343 343 343 1 0 320 320 100 320 310 343 343 2 0 361 361 110 391 391 80 337 337 210 3 0 0 0 0 0 0 0 0 0	Turn Type	pm+pt	ΑN	Perm	pm+pt	Ϋ́	Perm	pm+pt	ΑN	Perm	pm+pt	≨	Perm
6 6 5 2 2 4 4 4 8 1 6 6 5 2 2 7 4 4 4 8 1 0 250 250 7.0 250 250 7.0 100 10.0 7.0 1 10 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 10.0 1 1 4.20 14.0 45.0 11.0 40.0 40.0 24.0 2 2 36.0 36.1 36.1 11.0 39.1 39.1 33.3 33.3 3 3 3 3 3 3 3 3 3	Protected Phases	~	9		2	2		7	4		က	∞	
1 6 6 5 2 2 7 4 4 4 3 70 250 250 70 250 250 70 100 100 70 100 309 309 100 309 309 100 343 343 41 100 22% 350% 117% 37.5% 92% 33.3% 33.3% 20.0% 80 38.1 38.1 110 37.9 37.5% 92% 33.3% 21.0 00 00 22 22 20 0 22 22 0 3.0 31 31 31 31 00 00 00 00 00 00 00 00 00 00 00 00 00	Permitted Phases	9		9	2		2	4		4	∞		∞
7.0 250 250 7.0 250 25.0 7.0 10.0 10.0 7.0 10.0 30.9 30.9 10.0 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 10.0 11.0 42.0 42.0 14.0 45.0 45.0 11.0 40.0 40.0 24.0 22% 35.0% 35.0% 11.7% 37.5% 37.5% 37.5% 33.3% 33.3% 20.0% 20.0 22 22 0.0 3.0 3.3 3.3 3.3 3.0 0.0 0.0 2.2 2.2 0.0 0.0 0.0 0.0 0.0 0	Detector Phase	~	9	9	2	2	2	7	4	4	က	∞	00
7.0 250 25.0 7.0 25.0 25.0 7.0 100 34.3 31.0 10.0 34.3 10.0 11.0 34.9 36.9 10.0 36.9 36.9 10.0 34.3 31.0 34.3 10.0 11.0 34.0 36.1 36.0 14.0 45.0 45.0 45.0 110 34.0 34.0 34.0 40.0 24.0 36.1 36.1 11.0 39.1 39.1 39.1 33.7 33.7 31.0 31.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Switch Phase												
100 309 309 100 30.9 30.9 100 34.3 34.3 10.0 11.0 42.0 42.0 44.0 45.0 41.0 40.0 40.0 24.0 28.0 36.0 36.1 36.1 41.0 37.5 37.5 38.9 33.3 33.3 33.3 30 30.1 36.1 11.0 39.1 39.1 80.0 33.7 33.7 21.0 30 32 22 22 22 22 0.0 3.0 3.3 3.3 3.0 30 5.9 5.9 3.0 5.9 5.9 3.0 6.3 6.3 6.3 4 4 4 4 4 4 4 4 4 4	Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
110	Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
92% 350% 350% 11.7% 37.5% 37.5% 92% 33.3% 20.0% 43.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.	Total Split (s)	11.0	45.0	45.0	14.0	45.0	45.0	11.0	40.0	40.0	24.0	53.0	53.0
8.0 36.1 36.1 11.0 39.1 39.1 8.0 33.7 33.7 21.0 30.0 3.7 3.7 3.7 21.0 30.0 3.7 3.7 3.7 3.7 3.7 3.7 3.1 3.3 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Total Split (%)	9.2%	35.0%	35.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
30 37 37 37 30 37 37 37 30 37 37 30 33 33 30 00 22 22 22 22 22 00 30 30 00 00 00 00 00 00 00 00 00 00	Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7	33.7	21.0	46.7	46.7
0.0 22 22 0.0 22 22 0.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
00 00 00 00 00 00 00 00 00 00 00 00 00	All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
3.0 5.9 5.9 3.0 5.9 5.9 3.0 6.3 6.3 8.0 12ead Lag Lead Lead Lead Lead Lead Lead Lead Lead	Lost Time Adjust (s)	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead Leg Leg Led Leg Leg	Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Yes	Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
(s) 25 55 55 5.5 5.5 5.5 2.5 4.0 4.0 2.5 2.5 4.0 4.0 2.5 2.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
s) 30 30 30 30 30 30 30 30 30 30 30 30 30	Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
None C-Min C-Min None C-Min C-Min None None None None 17.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.0 7.0 7.0 7.0 7.0 7.0 7.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
14.0 14.0 14.0 14.0 14.0 14.0 14.0 15 15 35	Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
15 15 15 35 35	Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
	Pedestrian Calls (#/hr)		15	15		15	15		35	35		35	35

Cycle Length: 120
Actualed Cycle Length: 120
Offset 43 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Kerr Street & Speers Road



Synchro 11 Report Page 5 Without Kerr St Improvements BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	1	†	>	/	ţ	4	•	←	*	۶	→	*
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	8	855	110	227	651	192	122	134	430	378	169	110
v/c Ratio	0.21	0.73	0.19	0.70	0.45	0.26	0.33	0.36	06.0	69.0	0.30	0.20
Control Delay	15.5	33.1	4.9	32.7	28.5	2.0	22.7	41.4	42.7	31.3	30.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0
Total Delay	15.5	33.1	4.9	32.7	28.5	2.0	22.7	41.4	42.7	33.9	30.9	5.3
Queue Length 50th (m)	6.7	102.9	1.6	29.7	0.09	0.0	16.8	26.8	47.7	61.8	29.4	0.0
Queue Length 95th (m)	15.0	123.0	6.4	#66.3	80.8	13.6	24.1	39.1	75.5	73.7	40.3	9.7
Internal Link Dist (m)		145.3			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	394	1171	571	323	1459	745	377	517	269	547	718	655
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	82	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.73	0.19	0.70	0.45	0.26	0.32	0.26	92.0	0.81	0.24	0.17

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

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

underment ane Configurations fraffic Volume (vph) uture Volume (vph) uture Volume (vph)	EBL											
ane Configurations raffic Volume (vph) uture Volume (vph)		EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
raffic Volume (vph) uture Volume (vph) leal Flow (vphpl)	<u></u>	‡	¥.	je-	‡	*	jr.	*	*	*	*	*
uture Volume (vph) leal Flow (vphpl)	2	735	92	195	260	165	105	115	370	325	145	95
leal Flow (vphpl)	20	735	92	195	260	165	105	115	370	325	145	95
(a) continue (a)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
oral Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
ane Util. Factor	1:00	0.95	1:00	1:00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
rpb, ped/bikes	1.00	1.00	0.95	1:00	1.00	96.0	1.00	1.00	0.93	1.00	1.00	0.95
-lpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00
Į.	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
It Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1799	3378	1437	1687	3438	1495	1674	1844	1429	1678	1845	1511
-It Permitted	0.39	1.00	1.00	0.16	1.00	1.00	0.65	1.00	1.00	0.56	1.00	1.00
Satd. Flow (perm)	733	3378	1437	281	3438	1495	1146	1844	1429	266	1845	1511
Peak-hour factor, PHF	98.0	98.0	0.86	0.86	98.0	0.86	98.0	0.86	0.86	0.86	0.86	0.86
Adi. Flow (vph)	200	855	110	227	651	192	122	134	430	378	169	110
RTOR Reduction (vph)	0	0	72	0	0	112	0	0	186	0	0	92
ane Group Flow (vph)	8	855	89	227	651	8	122	134	244	378	169	34
Confl. Peds. (#/hr)	15		9	9		15	20		35	35		20
Heavy Vehicles (%)	%0	%9	%/	%/	2%	4%	%9	1%	2%	2%	3%	2%
3us Blockages (#/hr)	0	4	0	0	0	0	0	2	0	0	0	0
urn Type	pm+pt	Α	Perm	pm+pt	¥	Perm	pm+pt	Ϋ́	Perm	pm+pt	≨	Perm
Protected Phases	-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4	∞		00
Actuated Green, G (s)	48.0	41.6	41.6	26.7	50.3	50.3	32.4	24.5	24.5	48.1	37.2	37.2
Effective Green, g (s)	48.0	41.6	41.6	26.7	50.3	50.3	32.4	24.5	24.5	48.1	37.2	37.2
Actuated g/C Ratio	0.40	0.35	0.35	0.50	0.42	0.42	0.27	0.20	0.20	0.40	0.31	0.31
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
/ehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
ane Grp Cap (vph)	350	1171	498	316	1441	626	344	376	291	516	571	468
//s Ratio Prot	0.01	0.25		60.00	0.19		0.02	0.07		c0.13	0.09	
//s Ratio Perm	0.08		0.03	c0.27		0.02	0.07		c0.17	0.17		0.02
/c Ratio	0.23	0.73	0.08	0.72	0.45	0.13	0.35	0.36	0.84	0.73	0.30	0.07
Jniform Delay, d1	22.6	34.3	26.3	21.2	25.0	21.4	34.5	41.0	45.8	28.0	31.5	29.2
Progression Factor	0.81	0.80	0.75	1:00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
ncremental Delay, d2	0.5	3.9	0.3	7.1	1.0	0.4	0.5	0.8	19.3	2.0	4.0	0.1
Jelay (s)	18.5	31.4	20.0	28.3	26.0	21.8	34.9	41.8	65.1	33.0	31.8	29.3
evel of Service	ш	O	ш	O	O	O	O	Ω	ш	O	O	O
Approach Delay (s)		29.5			25.7			55.2			32.1	
Approach LOS		O			O			ш			O	
ntersection Summary												
HCM 2000 Control Delay			33.8	Ĭ	HCM 2000 Level of Service	Level of	Service		U			
HCM 2000 Volume to Capacity ratio	/ ratio		0.77									
Actuated Cycle Length (s)			120.0	જ	Sum of lost time (s)	time (s)			18.2			
ntersection Capacity Utilization	_		81.1%	೦	ICU Level of Service	of Service						
Analysis Period (min)			15									

Without Kerr St Improvements BA Group - EFS

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Timings 4: Dorval Road & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	4	†	<i>></i>	-	ţ	4	•	-	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	<i>y</i>	₩	*	F	₩	K.	F	4₽	<i>y</i> -	44	¥C_	
Traffic Volume (vph)	415	280	40	75	330	285	20	830	275	525	255	
Future Volume (vph)	415	280	40	75	330	285	70	830	275	525	255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	≱	vo+mq	pm+pt	₹	pm+pt	ΑN	Perm	
Protected Phases	7	4		က	∞	~	2	2	~	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	-	2	2	-	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0	13.0	45.0		11.0	45.0	12.0	46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	•	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0		7.0	38.0	8.0	39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0		3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0		1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0		3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0:0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None		None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Colo cooth: 120												
Cycle Lengtn: 120												

Splits and Phases: 4: Dorval Road & Speers Road

Actuated Oycle Length: 120
Actuated Oycle Length: 120
Offset: 41 (34%), Referenced to phase 2.NBTL and 6:SBTL, Start of Green
Natural Oycle: 125
Control Type: Actuated-Coordinated

\$00 **₽** 03 **√** Ø7 ⁴√ Ø2 (R) ↑ øs • • ø6 (R)

Without Kerr St Improvements BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Total AM (Phase 1) Upper Ker Village (8124-01)

	1	†	<u> </u>	>	ļ	4	•	—	۶	-	•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Group Flow (vph)	451	630	43	82	424	310	9/	1043	299	571	277	
//c Ratio	0.94	0.64	0.08	0.31	0.64	0.49	0.19	0.94	0.93	0.38	0.36	
Control Delay	79.4	40.1	0.3	16.9	35.9	10.8	17.8	55.5	6.09	10.5	3.1	
ეueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	79.4	40.1	0.3	16.9	35.9	10.8	17.8	55.5	6.09	10.5	3.1	
Queue Length 50th (m)	54.8	71.4	0.0	5.2	37.3	26.7	8.3	123.9	30.4	35.4	10.1	
Queue Length 95th (m)	#85.1	79.0	0.0	7.8	45.6	34.2	19.6	#165.4	#141.0	45.6	16.4	
nternal Link Dist (m)		412.3			472.1			621.6		494.4		
Turn Bay Length (m)	0.09		0.09	85.0		22.0	0.07		110.0			
Base Capacity (vph)	481	1192	009	276	949	639	393	111	321	1503	761	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.94	0.53	0.07	0:30	0.45	0.49	0.19	0.94	0.93	0.38	0.36	

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

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	4	†	<i>></i>	-	↓	4	•	←	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř.	‡	*-	*	\$	*	r	₩		<u>, </u>	‡	*-
Traffic Volume (vph)	415	280	40	75	390	285	20	830	130	275	525	255
Future Volume (vph)	415	280	40	75	330	285	02	830	130	275	525	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Util. Factor	0.97	0.95	9.0	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	8.5	00.1	8.6	0.1	8.6	0.99	0.10	00.1		00.1	8.5	0.30
Ft.	1.00	1.00	0.85	1.00	0.1	0.85	1.00	0.98		0.1	8 6.	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1785	3477		1687	3539	1417
Flt Permitted	0.95	1.00	1.00	0.38	1.00	1.00	0.44	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3400	3329	1482	099	3256	1494	822	3477		172	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	630	43	82	424	310	9/	902	141	599	571	277
RTOR Reduction (vph)	0	0	30	0	0	69	0	10	0	0	0	163
Lane Group Flow (vph)	421	630	13	82	424	241	9/	1033	0	538	571	114
Confl. Peds. (#/hr)	2					2	2					2
Heavy Vehides (%)	3%	%8	%6	%6	10%	4%	1%	2%	%0	%2	2%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	ΑN	Perm	pm+pt	₹	vo+mq	pm+pt	¥		pm+pt	ΑA	Perm
Protected Phases	7	4		က	∞	_	2	2		_	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.0	35.4	35.4	32.4	25.4	43.8	43.4	37.2		59.6	49.4	49.4
Effective Green, g (s)	17.0	35.4	35.4	32.4	25.4	43.8	43.4	37.2		29.6	49.4	49.4
Actuated g/C Ratio	0.14	0.29	0.29	0.27	0.21	0.36	0.36	0.31		0.50	0.41	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	481	982	437	236	689	545	347	1077		317	1456	583
v/s Ratio Prot	c0.13	c0.19		0.02	0.13	0.07	0.01	0.30		00.14	0.16	
v/s Ratio Perm			0.01	0.07		0.09	0.07	0		00.32		0.08
We Katlo	61.0	96.0	0.03	0.35	70.0	20 00	0.22	0.90		96.7	0.39	0.20
Progression Factor	100	100	100	0.65	0.74	0.51	100	100		0.97	0.39	0.61
Incremental Delay. d2	26.0	2.0	0.1	6.0	2.3	9.0	0.3	19.1		29.5	9.0	9.0
Delay (s)	76.9	38.8	30.1	22.9	33.9	15.3	25.9	59.8		64.0	10.1	14.3
Level of Service	ш	Ω	ပ	ပ	ပ	ш	ပ	ш		ш	ш	ш
Approach Delay (s)		53.7			25.7			57.5			25.2	
Approach LOS		Ω			O			ш			ပ	
Intersection Summary												
HCM 2000 Control Delay			41.5	Ĭ	CM 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	ty ratio		06:0									
Actuated Cycle Length (s)			120.0	ร	ım of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	on		86.1%	2	U Level	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

Timings Future Total AM (Phase 1) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

Lane Group EBI EBT WBT NBR 66 Lane Configurations Fig. 19 785 20 Futur Yole Futur Yole Found Foreign EBI EBT WBT NBR 66 Futur Yole Found Body EBI EBT WBT NBR 66 Futur Yole Found Body EBI EBT WBT NBR 66 Futur Yole Found Body EBI EBT WBT NBR 66 Futur Yole Found Body EBI EBT WBT NBR 66 Futur Yole Found Body EBI EBT WBT 88 Futur Yole Found Body EBI EBT And 8 WBT, Start of Green Futur Yole Futur Yole Futur Yole Futur Yole Found Body EBI EBT And 8 WBT, Start of Green Futur Yole Futur Yol				5			
Lane Group EBL EBT WBT NBR 66 Lane Configurations Taff of Value (vph) 5 77 785 20 Traffic Volume (vph) 5 870 785 20 20 Pemmited Phases 4 8 2 2 2 Detactor Phase 4 8 2 2 2 Detactor Phase 4 8 2 2 2 3 3 Detactor Phase 4 8 2 2 2 3		4	†	Ļ	•		
Lane Configurations	Lane Group	EBL	EBI	WBT	NBR	90	
Traffic Volume (vph) 5 870 785 20 Turn Type Turn Type Protected Phases 4 8 2 Turn Type Protected Phases 4 8 2 Protected Phases 4 8 2 Defector Phases 4 8 2 Switch Phase 5 50 50 50 50 Switch Phase 5 50 50 50 Total Spit (%) 663% 683% 683% 31.7% 32% All-Red Time (s) 37 37 37 37 37 37 All-Red Time (s) 37 37 37 37 37 All-Red Time (s) 50 50 50 50 50 Minimum Gap (s) 50 50 50 50 Minimum Gap (s) 50 50 50 Minimum Gap (s) 50 50 50 Minimu	Lane Configurations	*	₩.	₩	*		
Future Volume (rph)	Traffic Volume (vph)	5	870	785	20		
Turn Type Perm NA Perm Femilited Phases 4 8 2 Pemilited Phases 4 8 2 Pemilited Phases 4 8 2 Detector Phase 4 8 2 Switch Phase 50 50 50 50 Switch Phase 50 23.9 23.9 24.3 24.3 Minimum Staff (s) 23.9 22.9 24.3 24.3 24.3 Total Spit (s) 82.0 82.0 38.0 38.0 38.0 38.0 Minimum Staff (s) 68.3% 68.3% 81.3% 31.7 37.0 37.0 30.0 30.0	Future Volume (vph)	Ω	870	785	20		
Protected Phases 4 8 6 Protected Phases 4 8 2 Defector Phases 4 8 2 Defector Phase 4 8 2 Defector Phase 4 8 2 Switch Phase 4 8 2 Switch Phase 5 0 5 0 5 0 5 0 Minimum Initial (s) 23.9 23.9 24.3 24.3 Minimum Split (s) 23.9 23.9 24.3 24.3 Minimum Split (s) 23.9 23.9 24.3 24.3 Minimum Gen (s) 22 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Turn Type	Perm	ΑN	Ϋ́	Perm		
Permitted Phases 4 8 2 Switch Phases 4 4 8 2 Switch Phases 5 0 5 0 5 0 5 0 Switch Lead-Lag Optimize? 5 0 5 0 5 0 5 0 5 0 Switch Before Reduce (s) 0 0 0 0 0 0 0 Switch East Dort Wark (s) 7 0 7 0 7 0 7 0 Switch East Switch Switch 5 0 0 0 0 0 0 0 0 Switch East Switch Switch 5 0 0 0 0 0 0 0 0 Switch East Switch Switch 5 0 0 0 0 0 0 0 0 Switch East Switch Switch 5 0 0 0 0 0 0 0 0 Switch East Switch Switch 5 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 Switch East Switch Switch 5 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 0 0 Switch East Switch 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Protected Phases		4	∞		9	
A without phase A A B 2 Solution Phase B 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Permitted Phases	4			2		
Minimum Salit (s) 5.0 5.0 5.0 5.0 Minimum Salit (s) 23.9 23.9 24.3 24.3 24.3 Minimum Salit (s) 23.9 23.9 23.9 24.3 24.3 24.3 24.3 Total Salit (s) 82.0 82.0 82.0 82.0 82.0 82.0 82.0 82.0	Detector Phase	4	4	∞	2		
Minimum Initial (s) 5.0 5.0 5.0 5.0 Minimum Initial (s) 2.39 2.39 2.39 2.33 2.43 Total Spit (s) 82.0 82.0 83.0 38.0 38.0 Total Spit (s) 68.3% 68.3% 81.7% 32.8 32.8 Total Spit (s) 76.1 76.1 76.1 77.7 33.3 33.3 All-Red Time (s) 2.2 2.2 2.2 3.0 30 30 All-Red Time (s) 5.9 5.9 5.9 6.3 3.0 30 All-Red Time (s) 2.2 2.2 2.2 2.2 2.2 2.2 3.0 30 All-Red Time (s) 5.0 0.0	Switch Phase						
Minimum Split (s) 239 239 24.3 24.3 Minimum Split (s) 820 820 820 88.0 Total Split (s) 863 863 863 87.0 820 Total Split (%) 863 863 87.7 37.7 37.7 Alaximum Green (s) 76.1 76.1 76.1 77.1 31.7 Ala. Red Time (s) 2.2 2.2 30 30 30 All-Red Time (s) 5.9 5.9 6.3 8.0 30 All-Red Lost Time (s) 5.9 5.9 6.3 8.0 3.0 Lead-Lag Optimize? 2.2 2.2 30 3.0 3.0 Lead-Lag Optimize? 3.0 3.0 3.0 3.0 3.0 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Readl Mode 5.0 0.0 0.0 0.0 0.0 0.0	Minimum Initial (s)	2.0	2.0	2.0	2.0	5.0	
Total Split (s) 82.0 82.0 38.0 Total Split (s) 68.3% 68.3% 81.7% 32% Alaximum Green (s) 76.1 76.2 22.2 30.3	Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	
Optail Split (%) 68.3% 68.3% 31.7% 32% Indiamum Green (s) 76.1 76.1 77.1 31.7 31.7 All-Red Time (s) 3.7 3.7 3.7 3.7 3.7 3.7 All-Red Time (s) 2.2 2.2 2.2 3.0 3.0 All-Red Time (s) 5.9 5.9 5.9 6.3 3.0 Cotal Lost Time (s) 5.9 5.9 5.9 6.3 3.0 Cotal Lost Time (s) 5.9 5.9 5.9 6.3 3.0 and Lost Lost Time (s) 5.9 5.9 5.9 6.3 3.0 and Lost Lost Time (s) 3.0 3.0 3.0 3.0 3.0 And Lost Lost Time (s) 3.0 3.0 3.0 3.0 3.0 Irine Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 And Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	Total Split (s)	82.0	82.0	82.0	38.0	38.0	
Waximum Green (s) 76.1 76.1 76.1 76.1 31.7 31.0 30.0 <td>Total Split (%)</td> <td>%8.3%</td> <td>68.3%</td> <td>98.3%</td> <td>31.7%</td> <td>32%</td> <td></td>	Total Split (%)	%8.3%	68.3%	98.3%	31.7%	32%	
Vellow Time (s) 3.7 3.7 3.3 3.3 Vellow Time (s) 2.2 2.2 3.0 3.0 Ost Time Adjust (s) 0.0 0.0 0.0 0.0 card Lost Time (s) 5.9 5.9 5.9 6.3 rotal Lost Time (s) 5.9 5.9 6.3 6.3 read/Lag Optimize? 3.0 3.0 3.0 3.0 eact Lag Optimize? 3.0 3.0 3.0 3.0 Vehicle Extension (s) 3.0 3.0 3.0 3.0 Minimum Gap (s) 7.0 7.0 7.0 7.0 Recall Mode (s) 1.10 1.10 1.10 1.10 Actual Constrain Calls (#ftr) 0 0 0 0 0 Actual Construction (s) 1.0 1.0 </td <td>Maximum Green (s)</td> <td>76.1</td> <td>76.1</td> <td>76.1</td> <td>31.7</td> <td>31.7</td> <td></td>	Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	
All-Red Time (s) 2.2 2.2 3.0 All-Red Time (s) 2.2 2.2 3.0 Chal Lost Time (s) 5.9 5.9 5.9 5.9 Chal Lost Time (s) 5.9 5.9 5.9 5.9 5.9 Chal Lost Time (s) 5.9 5.9 5.9 5.9 5.9 5.9 cead Leg Optimize? 3.0 3.0 3.0 3.0 3.0 3.0 Vehicle Extension (s) 0.0 0.0 0.0 0.0 0.0 0.0 Minimum Septore Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 Minimum Septore Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 Minimum Septore Reduce (s) 0.0 <th< td=""><td>Yellow Time (s)</td><td>3.7</td><td>3.7</td><td>3.7</td><td>3.3</td><td>3.3</td><td></td></th<>	Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	
Total Lost Time (s) 5.9 5.9 6.3 aed-Lag Optimize? 3.0 3.0 3.0 3.0 aed-Lag Optimize? 3.0 3.0 3.0 3.0 3.0 dehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 dehicle Extension (s) 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Rich Extension (s) 7.0 7.0 7.0 0.0 0.0 Rezall Mode C-Min C-Min None None None None None None None Non	Lost Time Adjust (s)	0.0	0.0	0.0	0.0		
ead-Lag Optimize? ead-Lag Optimize? Winimum Gap (s) 3.0 3.0 3.0 3.0 Winimum Gap (s) 3.0 3.0 3.0 3.0 Winimum Gap (s) 3.0 3.0 3.0 Winimum Gap (s) 3.0 3.0 3.0 Winimum Gap (s) 0.0 0.0 0.0 Recall Mode Could C	Total Lost Time (s)	5.9	5.9	5.9	6.3		
ead-Lag Optimize? 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead/Lag						
Vehicle Extension (s) 3.0 3.0 3.0 3.0 Immediate Extension (s) 3.0 3.0 3.0 3.0 Immediate Reduces (s) 0.0 0.0 0.0 0.0 Immediate Reduces (s) 0.0 0.0 0.0 0.0 Immediate Reduces (s) 0.0 0.0 0.0 0.0 Recall Mode C-Min C-Min C-Min None None None ARIT (s) 7.0 7.0 7.0 Alex Time (s) 7.0 7.0 7.0 7.0 7.0 Alex Time (s) 1.0 1.0 1.0 1.0 1.0 Alex Time (s) 1.0 1.0 1.0 0 0 Pedestrian Calls (#fir) 0 0 0 0 0 Actual and Cycle Length: 120 Actual and S.WBT, Start of Green Actual and S.WBT, Start of Green Actual and S.WBT, Start of Green	-ead-Lag Optimize?						
Minimum Gap (s) 3.0	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode C-Min C-Min C-Min Mone None None Alak Time (s) 7.0 7.0 7.0 7.0 Tash Dont Walk (s) 11.0 11.0 11.0 10.0 Pedestrian Calls (#hr) 0 0 0 0 0 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle Length: 120	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode CMin CMin CMin None Avalk Time (s) 7.0 7.0 7.0 7.0 Flash Dort Walk (s) 1.0 1.0 1.0 1.0 1.0 Pedestrian Calls (#hr) 0 0 0 0 0 0 Intersection Summary 0 0 0 0 0 0 Actualed Cycle Length: 120 All Land Sylke Efferenced to phase 4:EBTL and 8:WBT, Start of Green Actualed Cycle 50 Actualed Cycle 50 Actualed Cycle 50	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Reacal Mode C-Min C-Min None None Aak Time (s) 7.0 7.0 7.0 7.0 Flash Dont Walk (s) 1.0 1.0 1.0 1.0 1.0 Pedestrian Calls (#fir) 0 0 0 0 0 0 Pedestrian Calls (#fir) 0 0 0 0 0 0 April Lagon Summary 0 0 0 0 0 0 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle Length: 120 Actualed Cycle: 50	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Walk Time (s) 7.0 7.0 7.0 7.0 Pedestrian Calls (#hr.) 0 0 0 0 Pedestrian Calls (#hr.) 0 0 0 0 Intersection Summary 0 0 0 0 Oycle Length: 120 0 0 0 0 Actualed Cycle Length: 120 0 0 0 0 Actualed Sycle Length: 120 0 0 0 0 0 Actualed Sycle Length: 120 0	Recall Mode	C-Min	S-Min	C-Min	None	None	
Flash Dont Walk (s)	Walk Time (s)	7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#hr) 0 0 0 0 0 Intersection Summary Sycle Length: 120 Adutated Cycle Length: 120 Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Control Type: Actuated-Coordinated	Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	
Intersection Summary Sycle Length: 120 Actuated Cycle Length: 120 Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Charlet Cycle: 50 Control Type: Actuated-Coordinated	Pedestrian Calls (#/hr)	0	0	0	0	0	
Cycle Length: 120 Actuated Cycle Length: 120 Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 50 Control Type: Actuated-Coordinated	Intersection Summary						
Actuated Cycle Length: 120 Offset 51 (43%), Referenced to phase 4.EBTL and 8:WBT, Start of Green Natural Cycle: 50 Control Type: Actuated-Coordinated	Cycle Length: 120						
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 50 Control Type: Actuated-Coordinated	Actuated Cycle Length: 120						
Natural Cycle: 50 Control Type: Actuated-Coordinated	Offset 51 (43%), Reference	ed to phase	4:EBTL 8	nd 8:WB	r, Start of	Green	
Control Type: Actuated-Coordinated	Natural Cycle: 50						
	Control Type: Actuated-Coc	ordinated					

Splits and Phases: 5: St. Augustine Drive & Speers Road



Without Kerr St Improvements

BA Group - EFS

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Queues 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

	1	†	,	•	
Lane Group	EBL	EBT	WBT	NBR	
Lane Group Flow (vph)	9	1006	606	23	
v/c Ratio	0.01	0.32	0.29	0.11	
Control Delay	1.6	1.4	4.0	<u>+-</u>	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	1.6	1.4	4.0	1.1	
Queue Length 50th (m)	0.2	16.4	31.6	0.0	
Queue Length 95th (m)	m0.3	m20.3	55.4	0.0	
Internal Link Dist (m)		472.1	42.5		
Turn Bay Length (m)	20.0				
Base Capacity (vph)	245	3124	3122	514	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.01	0.32	0.29	0.04	
Intersection Summary					
w Volume for 95th percentile guere is metered by unstream signal	ntile anene	s meterec	hvinstra	am signal	
	anonh ami	3	200		

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total AM (Phase 1) Upper Ker Village (8124-01)

	1	†	>	>	ļ	4	•	←	*	٠	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u></u>	₩			₩.				¥	<u>r</u>	æ	
Traffic Volume (vph)	S	870	15	0	785	15	0	0	20	0	0	0
Future Volume (vph)	2	870	15	0	785	15	0	0	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.9	2.9			2.9				6.3			
Lane Util. Factor	1.0	0.95			0.95				1.00			
Frpb, ped/bikes	1:00	1.00			1.00				1.00			
Flpb, ped/bikes	1.00	1.00			1.00				1.00			
T.L	1.00	1.00			9.				0.86			
Fit Protected	0.95	1.00			1.00				1.00			
Satd. Flow (prot)	1796	3430			3426				1565			
Fit Permitted	0.31	1.00			1.00				1.00			
Satd. Flow (perm)	593	3430			3426				1565			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	9	686	17	0	892	17	0	0	23	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	22	0	0	0
Lane Group Flow (vph)	9	1006	0	0	606	0	0	0	-	0	0	0
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehicles (%)	%0	2%	%0	%0	2%	2%	%0	%0	2%	%0	%0	%0
Turn Type	Perm	NA			AN				Perm	Perm		
Protected Phases		4			œ						9	
Permitted Phases	4								2	9		
Actuated Green, G (s)	104.5	104.5			104.5				3.3			
Effective Green, g (s)	104.5	104.5			104.5				3.3			
Actuated g/C Ratio	0.87	0.87			0.87				0.03			
Clearance Time (s)	5.9	5.9			5.9				6.3			
Vehicle Extension (s)	3.0	3.0			3.0				3.0			
Lane Grp Cap (vph)	516	2986			2983				43			
v/s Ratio Prot		c0.29			0.27							
v/s Ratio Perm	0.01								c0.00			
v/c Ratio	0.01	0.34			0.30				0.01			
Uniform Delay, d1	1.0	1.4			1.4				26.8			
Progression Factor	1.18	0.98			3.04				1.00			
Incremental Delay, d2	0.0	0.2			0.3				0.1			
Delay (s)	1.2	1.6			4.4				6.99			
Level of Service	V	4			V				ш			
Approach Delay (s)		1.6			4.4			56.9			0.0	
Approach LOS		∢			∢			ш			∢	
Intersection Summary												
HCM 2000 Control Delay			3.6	Ĭ	1000 M	HCM 2000 Level of Service	anina		٥			
HCM 2000 Volume to Capacity ratio	city ratio		0.33	Ĕ	10002 IN		an Aice		C			
Activited Cycle Longth (c)	outh Idea		130.00	ō	Cum of loct time (c)	timo (e)			10.0			
Actuated Cycle Lettigui (3)	ion		2000	3 5	2000	(e) country			7. <			
Illelsection capacity ountain	11011		00.00	2	o revel o	OO Level OI Selvice			τ			
Analysis Period (min)			2									
Critical Long Crous												

c Critical Lane Group

Without Kerr St Improvements BA Group - EFS

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

→ → → + + 	EBL EBT WBT SBL SBR	N 44 45 N	202	205 1220 605 5	N td+md	es 5 2 6 4		5 2 6 4 4		(s) 6.0 38.0 38.0 10.0 10.0	12.0 47.6 47.6	35.0 109.0 74.0 31.0	77.9% 52.9% 22.1% 2:	29.0 102.4 67.4	4.0 3.7 3.7	2.0 2.9 2.9		9.9 9.9 0.9	Lead	Yes	3.5 5.0 5.0 3.0	3.0 3.0 3.0 3.0	uce (s) 0.0 0.0 0.0 0.0	0.0 0.0 0.0	None C-Min C-Min None None	10.0 10.0	(s) 31.0 31.0	s (#hr) 5 5	nmary	40	Length: 140	Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 99 (71%), Refere	

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1)	Upper Kerr Village (8124-01
Queues	6: Speers Road/Cornwall Road & Cross Avenue

6: Speers Road/Cornwall Road & Cross Avenue	rnwall F	oad &	Cross	Avenu	ar	Upper Kerr Village (8124-01)
	1	1	↓	1	•	
	,	ì			,	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1435	736	9	288	
v/c Ratio	0.42	0.49	0.29	0.02	0.63	
Control Delay	4.3	3.9	7.2	9.09	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.3	3.9	7.2	9.09	12.9	
Queue Length 50th (m)	9.4	44.7	33.1	1.6	0.0	
Queue Length 95th (m)	14.5	53.4	43.1	5.7	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	729	2905	2501	324	202	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.49	0.29	0.02	0.41	
Intersection Summary						

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HCM Signalized Intersecti 6: Speers Road/Cornwall I

FBL 205 h) 205 h) 205 h) 205 h) 205 h) 206 h) 207 h	### ### ### ### ### ### ### ### ### ##	MBR SBL 20 5 20 5 20 5 20 6 1900 1900 1000 1000 1000 1000 1000 1000		BBR 245 245 5 26 5 8 6 900 1.00 1.00 1.00 668 608 2.28 2.28 2.28 2.29 2.39 2.39 2.39 2.39 3.30 3.30 3.30 3.30 3.30 3.30 3.30 3
205 205 206 1900 1,00 1,00 1,00 1,00 1,00 1,00 1,00				8888888888888888888888888888888888888
205 205 1900 6.0 6.0 1.00 1.00 1.00 1.00 0.95 1.08 0.38 241 0.38 0.38 0.38 0.38 0.38 0.38 0.38 0.38		± 44405050	[4]	55 50 00 58 88 88 88 88 88 88 88 88 88 88 88 88
205 1900 6 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.		£ 44449 £ 9 £ 10		55 88 88 80 80 80 88 88 88 88 87 87 87 87
1900 1.00 1.00 1.00 1.00 0.34 1.08 0.34 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		£ 44405050		88 88 88 88 88 88 88 88 88 88 88 88 88
60 1.00 1.00 1.00 1.00 0.34 0.34 0.34 0.34 0.34 0.35 2.41 0 0 0 0 0 0.85 2.41 0 0 0 0 0.85 0.34 0.34 0.34 0.34 0.34 0.34 0.34 0.34		4449494		8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
1,000 1,000				88 000 000 88 88 87 17 17 17
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00				000 88 88 88 88 87 17 17 17
1,00 1,00 0,95 1,686 1,686 0,34 5,99 0,88 2,41 0 0 0 0,88 0,88 0,88 0,88 0,88 0,88 0,				25 55 50 0 88 80 0 88 80 0 88 80 0 88 80 0 88 80 0
1.00 0.95 1686 0.34 599 0.85 0.85 241 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				88 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
0.95 1686 0.34 599 0.85 241 0 0 0 241 5 7%				00 00 00 00 00 00 00 00 00 00 00 00 00
1686 0.34 0.34 5.99 0.85 241 0 0 0 0 7% 7% pm+pt				88 88 88 88 88 88 88
0.34 599 0.85 241 0 0 0 241 7% 77 pm+pt				00 88 87 87 21 21
599 0.85 241 0 0) 241 5 7% pm+pt	, , , , , , , , , , , , , , , , , , ,			88 88 88 11 12 88 88 88 88 88 88
0.85 241 0 0) 241 5 5 7% pm+pt				55 88 88 1.1 7.7 7.7 7.7 7.7 7.7 7.7 7.7 7.7 7.7
241 on (vph) 0 ow (vph) 241 fhr) 5 c (%) 7% pm+pt				88 21 88 88
241 5 7% pm+pt			<u>~</u>	21 % m
ph) 241 5 7% pm+pt			هـ ا	27 % m
5 7% pm+pt			ه ا	% u
7% pm+pt			<u>a</u>	
pm+pt		Pr		ш
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2				4
) 117.2		10.4		.4
_	_	10.4		4.
0.84	_	0.07	_	7(
	9.9 9.9	5.8		5.8
3.5		3.		0.
(vph) 576	2905 2501	134		193
0.03		0.0		
Perm 0.32			Ü	71
0.42		0.04		_
Uniform Delay, d1 2.7		60.2	.2 60.5	ž.
		1.0		00
d2 0.6	0.6 0.3	0.1		0.3
3.3		60.3	.3 60.7	7.
Level of Service A	Α Α		ш	ш
(s) /	7	2.09	.7	
Approach LOS	A A		ш	
Intersection Summary				
HCM 2000 Control Delay	10.8	HCM 20	000 Level	HCM 2000 Level of Service B
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	140.0	Sum of	Sum of lost time (s)	(s) 18.4
Intersection Capacity Utilization	69.2%	ICU Lev	ICU Level of Service	vice
Analysis Period (min)	15			

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 1) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

	4	†	/	\	Ļ	4	•	—	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (veh/h)	2	0	2	2	0	40	2	545	2	40	380	2
Future Volume (Veh/h)	2	0	2	2	0	40	2	545	2	40	380	2
Sign Control		Stop			Stop			Free			Free	
Grade		%0			%0			%0			%0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	9	0	9	9	0	48	9	649	9	48	452	9
Pedestrians		15			8							
Lane Width (m)		3.6			3.6							
Walking Speed (m/s)		[-										
Percent Blockage		-			က							
Right tum flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								238			127	
pX, platoon unblocked	0.92	0.92	0.85	0.92	0.92	0.87	0.85			0.87		
vC, conflicting volume	1278	1263	470	1251	1263	682	473			685		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	920	933	292	920	933	265	296			268		
tC, single (s)	7.1	6.5	6.5	7.1	6.5	6.3	4.3			4.2		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.6	3.5	4.0	3.4	2.3			2.3		
p0 queue free %	97	100	66	26	100	8	66			94		
cM capacity (veh/h)	179	221	571	206	221	434	1001			833		
Direction, Lane #	EB 1	WB1	NB 1	SB1								
Volume Total	12	54	661	206								
Volume Left	9	9	9	48								
Volume Right	9	8	9	9								
cSH	273	386	1001	833								
Volume to Capacity	0.0	0.14	0.01	90:0								
Queue Length 95th (m)	1.0	3.7	0.1	1.4								
Control Delay (s)	18.8	15.8 C	0.2	4.6								
Lane LOS	۽ د	ې د	₹ 6	₹ (
Approach Delay (s)	18.8	15.8	0.7	9.								
Approach LOS	ပ	ပ										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization	tion		57.1%	⊇	U Level o	CU Level of Service			ш			
Analysis Period (min)			15									

Synchro 11 Report Page 17 Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total AM (Phase 1) Upper Ken Village (8124-01)

Lange Control Contro		١	>		_	+	*	
yuations	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
me (veh/n) 20 10 5 525 350 30 me (veh/n) 24 12 6 618 412 35 ckage 2 0 5 5 618 412 35 ckage 2 2 0 5 6 618 412 35 ckage 2 2 0 0 ckage 2 2 0 0 ckage 2 2 0 0 ckage 4 4 7 mublocked 0.89 0.93 0.93 103 262 mublocked 0.93 0.93 0.93 103 262 mublocked 0.93 0.93 0.93 103 262 mublocked 0.93 0.93 0.93 103 262 mublocked 0.94 477 mane # EB1 NB1 SB1 mane # CA	Lane Configurations	>			€	æ,		
me (Vehith) 20 10 5 525 350 30 me (Vehith) 20 0 6 526 350 30 me (Vehith) 24 12 6 618 412 35 mate (vehith) 36 085 085 085 mate (vehith) 36 089 0.83 0.83 mate (vehith) 36 089 0.83 0.83 mate (vehith) 36 089 0.83 0.83 mate (vehith) 374 388 mate (vehith) 374 388 mate (vehith) 374 388 mate (vehith) 375 3.3 2.2 mate (vehith) 376 0.35 mate (vehith) 377 0.35 mate (vehith) 378 0.33 mate (vehith) 378 0.33 mate (vehith) 379 0.35 mate (vehith) 370 0.35 m	Traffic Volume (veh/h)	20	10	2	525	320	30	
Stop Free Free Free Free Free Free Free Fr	Future Volume (Veh/h)	20	10	2	525	320	30	
Factor 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Sign Control	Stop			Free	Free		
rate (vph) 24 12 6 618 412 35 rate (vph) 24 12 6 618 412 35 (m) 3.6	Grade	%0			%0	%0		
rate (vph) 24 12 6 618 412 35 (m) 36	Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	
trim) 20 5 5 6 6 6 6 6 6 6 6 7 6 7 6 6 6 6 6 7 6 7	Hourly flow rate (vph)	24	12	9	618	412	35	
(m) 3.6 3.6 (ms) 1.1 (ms) 3.6 (ms) 1.1 (ms) 3.6 (ms) 1.1	Pedestrians	20			2			
ead (mis) 111 111 ckage 2 0 ckage 2 0 sare (veh) None None age veh) 103 262 grap (m) 1080 454 467 rg volume 1080 933 033 rg volume 1080 454 467 rg volume 1080 454 467 rg volume 1080 454 467 (s) 3.3 2.2 ee % 92 98 99 ee % 93 99 ee % 94 47 ee % 94 47 ee % 94 47 ee % 94 47 ee % 94 447 ee % 94	Lane Width (m)	3.6			3.6			
ckage 2 0 are (veh) age veh) grad (m) grad (m) grad (m) grad (m) confivol 1 confivol 2 confivol 2 confivol 4 6.7 (s) 8 6.4 6.2 4.1 (s) 8 6.4 6.2 4.1 (s) 1 2 98 99 1 0 89 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Walking Speed (m/s)	[-			1.			
are (veh) agaveth by grael (m) grael (m) grael (m) grael (m) agaveth by grael (m) 103 262 103 262 103 262 103 262 103 262 104 62 4.1 105 34 467 105 4 6.2 4.1 105 38 39 105 4 6.2 4.1 105 38 39 105 4 6.2 4.1 105 38 39 105 4 67 105 38 39 105 4 67 105 38 39 105 4 67 105 38 39 105 4 67 105 38 39 105 105 105 105 105 1	Percent Blockage	2			0			
age veh) be veh age veh) age veh a	Right turn flare (veh)							
age veh) age veh) age veh) transport (m) age veh) age ve	Median type				None	None		
giral (m) unblocked 0.89 0.93 0.93 unblocked 0.89 0.93 0.93 unblocked 0.89 0.93 0.93 tooffood 454 467 tooffood 454 467 tooffood 846 374 388 tooffood 846 374 388 tooffood 846 374 388 tooffood 92 98 99 t(vehrh) 291 614 1078 ane # EB1 NB1 SB1 tt 24 6 0 tht 12 0 35 tht 12 0 35 tht 12 0 35 tht 26 0.1 0.0 ay (s) C A Summary OS C C A Substitutization 422% Included of Service	Median storage veh)							
unblocked 0.89 0.93 0.93 unblocked 0.89 0.93 0.93 unblocked 1080 454 467 Lond vol Lond vol Lond vol Son frod Red vol Se % 32 3.3 2.2 ee % 32 98 99 ee % 32 98 99 ee % 32 98 99 ef / 40 7 th 12 0 35 th 12 0 35 th 12 0 35 th 12 0 35 th 12 0 0.35 th 12 0 0.0 bit 353 1076 collay (s) 164 0.2 0.0 collactive thiration 15 0.0 collactive thiration	Upstream signal (m)				103	262		
ng volume 1080 454 467 I confload 2 confload 2 confload 3 confloa	pX, platoon unblocked	0.89	0.93	0.93				
Confivol	vC, conflicting volume	1080	454	467				
2 conf vol	vC1, stage 1 conf vol							
ked vol 846 374 388 (s) 6.4 6.2 4.1 (s) 3.5 3.3 2.2 ee % 92 98 99 ee % 92 98 99 in me# EB1 NB1 SB1 and al 36 614 70 ht 12 0 35 ht 12 0 35 ht 12 0 35 ht 2.6 0.1 0.0 ay (s) 16.4 0.2 0.0 c A 0 0 c A 0 0 c A 0 0 c C 0 0 c C 0 0 c C 0 0 c C 0 0 c C 0 0 c 0 <	vC2, stage 2 conf vol							
(s) 6.4 6.2 4.1 (s) 3.5 3.3 2.2 ee % 92 98 99 (venh) 291 614 1078 an	vCu, unblocked vol	846	374	388				
(s) 3.5 3.3 2.2 ee % 92 98 99 fivehh) 291 614 1078 ane # EB1 NB 1 SB1 t	tC, single (s)	6.4	6.2	4.1				
8% 35 33 22 89% 99 99 80 99 99 80 99 99 80 99 99 80 90 90 90 80 90 90 90 80 90 90 90 80 90 90 90 80 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 80 90 90 90 90 90 80 90 90 90 90 90 80 90 90 90 90 90 90 80 90 90 90 90 90 90 90 90 90 90 90 90 90	tC, 2 stage (s)							
ee % 92 98 99 (veh/h) 291 614 1078 and 85 624 447 th 12 0 35 ht 12 0 35 th 353 1078 Saperity 0.10 0.01 0.26 ght 95th (m) 2.6 0.1 0.0 Summary 0.6 Capacity Utilization 15 EB 1 NB 1 SB 1 A 47 A 7 B 6 0.1 0.0 C A Summary 0.6 Summary 0.6 A 7 A 7 A 7 Capacity Utilization 15 The 12 0 0.0 Summary 0.6 The 12 0 0.0 Summary 0.6 The 12 0.0 F(s)	3.5	3.3	2.2					
in the first separate of the service of Service services of the service of Se	p0 queue free %	35	86	66				
al SB 1 al 36 624 447 t 24 6 0 ht 12 353 1078 1700 sapacity 0.10 0.01 0.26 sapacity 0.10 0.01 0.20 C A A 0.2 0.0 Summary 0.6 Summary 0.6 Copacity Utilization 43.2% ICU Level of Service or Capacity Utilization 15	cM capacity (veh/h)	291	614	1078				
t	Direction, Lane #	EB 1	NB 1	SB 1				
t 24 6 0 Int 12 0 35 Int 363 1078 1700 Sepacity 0.10 0.01 0.26 July (s) 16,4 0.2 0.0 Summary Logacity Utilization 15 Int 12,4 0.2 0.0 Summary 0.6 Summary 0.6 Int 12,4 0.2 0.0 Summary 0.6 Int 12,6 0.1	Volume Total	36	624	447				
ht 12 0 35 28.3 1079 1700 29.6 0.1 0.00 39.(s) C A Summary Coscapcity tilization 12 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Left	24	9	0				
29 acity 0.10 0.01 0.26 1th Sefti(m) 2.6 0.1 0.0 ay (s) C A Careaty Utilization 15.4 0.2 0.0 Summary 0.6 Capacity Utilization 15.4 0.2 Summary 0.6 Capacity Utilization 43.2% ICU Level of Service 15.4 0.2 0.0	Volume Right	12	0	35				
Japacity 0.10 0.01 0.26 James Strain 16.4 0.2 0.0 Jay (s) 16.4 0.2 0.0 OS C A A Colar (s) 16.4 0.2 0.0 OS C A Summary 0.6 Colactity Utilization 43.2% ICU Level of Service rood (min) 15	cSH	353	1078	1700				
yt (s) 2 6 0.1 0.0 y (s) 16.4 0.2 0.0 C A A 0.2 OS C Summary alay (a) 16.4 0.2 0.0 C C Summary 187 187 187 187 187 187 187 18	Volume to Capacity	0.10	0.01	0.26				
ay (s) 16.4 0.2 0.0 C A Cost Cost Cost Cost Cost Cost Cost Cost	Queue Length 95th (m)	5.6	0.1	0.0				
C A elay (s) 16.4 0.2 0.0 OS C Summary 0.6 To CD Level of Service rich (min) 15	Control Delay (s)	16.4	0.2	0.0				
16.4 0.2 0.0 C 0.0 Utilization 43.2% ICU Level of Service	Lane LOS	O	∢					
C 0.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Approach Delay (s)	16.4	0.2	0.0				
0.6 Utilization 43.2% ICU Level of Service	Approach LOS	O						
0.6 Utilization 43.2% ICU Level of Service 15	Intersection Summary							
Utilization 43.2% ICU Level of Service	Average Delay			9.0				
15	Intersection Capacity Utiliza	ation		43.2%	2	U Level o	Service	⋖
	Analysis Period (min)			15				

Without Kerr St Improvements BA Group - EFS

Timings
Future Total AM (Phase 1)
9: Kerr Street & Stewart Street

→	SBT	4	280	280	Ν	9		9		24.0	32.0	45.0	%0.09	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	35						
۶	SBL		40	40	pm+pt	~	9	τ-		0.9	10.0	10.0	13.3%	7.0	3.0	0.0			Lead	Yes	3.0	3.0	0.0	0.0	None									
←	NBT	€\$	420	420	Ϋ́	2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		2	2	Perm		2	2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				of Green		
ţ	WBT	4	32	32	Ϋ́	∞		∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				TL, Start		
-	WBL		20	20	Perm		∞	∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				and 6:SB		
†	EBT	4	52	52	Ϋ́	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	70				2:NBTL		
1	EBL		32	32	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				ed to phase	To the state of	ordinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control I ype: Actuated-Coordinated

Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street & Stewart Street

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Without Kerr St Improvements
BA Group - EFS
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Queues

Queues

9: Kerr Street & Stewart Street

Upper Kerr Village (8124-01)

	†	ļ	←	-	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	79	152	542	427	
v/c Ratio	0.28	0.40	0.47	0.42	
Control Delay	23.8	14.2	9.6	9.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	23.8	14.2	9.6	9.0	
Queue Length 50th (m)	9.6	8.7	24.6	18.0	
Queue Length 95th (m)	15.4	16.8	61.6	47.8	
Internal Link Dist (m)	71.6	36.6	141.0	0.62	
Turn Bay Length (m)					
Base Capacity (vph)	429	229	1156	1028	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.17	0.27	0.47	0.42	
Intersection Summary					

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

	1	†	<i>></i>	>	ļ	4	•	—	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	32	52	2	20	32	02	2	420	20	40	280	30
Future Volume (vph)	32	22	2	20	32	02	2	420	20	40	280	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.4			5.4			5.4			5.4	
Lane Util. Factor		0.1			0.1			1.00			1.00	
Frpb, ped/bikes		1.00			0.97			1.00			0.99	
Flpb, ped/bikes		0.39			1.00			1.00			1.00	
Fr		0.39			0.92			0.99			0.99	
Fit Protected		0.97			0.39			1.00			0.99	
Satd. Flow (prot)		1701			1612			1775			1726	
Flt Permitted		0.79			0.94			1.00			06:0	
Satd. Flow (perm)		1388			1532			1769			1570	
Peak-hour factor, PHF	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	43	9	9	54	43	82	9	512	24	49	34	37
RTOR Reduction (vph)	0	2	0	0	89	0	0	~	0	0	က	0
Lane Group Flow (vph)	0	74	0	0	8	0	0	541	0	0	424	0
Confl. Peds. (#/hr)	20		20	20		50	30		35	35		30
Heavy Vehicles (%)	2%	%/	16%	%0	2%	4%	28%	%9	%0	5%	%9	%9
Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	4	0
Turn Type	Perm	ΑN		Perm	A		Perm	ΑN		pm+pt	≨	
Protected Phases		4			∞			2		_	9	
Permitted Phases	4			∞			2			9		
Actuated Green, G (s)		15.2			15.2			49.0			49.0	
Effective Green, g (s)		15.2			15.2			49.0			49.0	
Actuated g/C Ratio		0.20			0.20			0.65			0.65	
Clearance Time (s)		5.4			5.4			5.4			5.4	
Vehicle Extension (s)		4.0			4.0			4.0			4.0	
Lane Grp Cap (vph)		281			310			1155			1025	
v/s Ratio Prot												
v/s Ratio Perm		0.02			c0.05			c0.31			0.27	
v/c Ratio		0.26			0.27			0.47			0.41	
Uniform Delay, d1		25.2			25.2			6.5			6.2	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.7			9.0			1.4			0.3	
Delay (s)		25.9			25.9			7.9			6.4	
Level of Service		O			O			¥			¥	
Approach Delay (s)		25.9			25.9			7.9			6.4	
Approach LOS		O			ပ			⋖			⋖	
Intersection Summary												
HCM 2000 Control Delay			10.8	 	HCM 2000 Level of Service	Level of S	Service		В			
HCM 2000 Volume to Capacity ratio	ty ratio		0.44									
Actuated Cycle Length (s)			75.0	Su	Sum of lost time (s)	time (s)			13.8			
Intersection Capacity Utilization	on		66.1%	Ō	ICU Level of Service	f Service			O			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

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Timings 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

Without Kerr St Improvements BA Group - EFS

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Future Total AM (Phase 1) Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

→	SBT	1581	0.72	27.8	0.0	27.8	101.1	140.3	672.1		2211	0	0	0	0.72			
۶	SBL	163	0.44	53.6	0.0	53.6	18.8	28.7		125.0	382	0	0	0	0.43			
←	NBT	1505	99.0	15.7	0.0	15.7	9.06	m128.5	494.4		2274	0	0	0	99.0			
•	NBL	120	0.54	28.0	0.0	28.0	8.2	m13.1		65.0	239	0	0	0	0.50			
ţ	WBT	381	99.0	24.4	0.0	24.4	17.1	31.3	199.3		1032	0	0	0	0.37			
>	WBL	22	0.09	28.6	0.0	28.6	3.7	9.1		145.0	358	0	0	0	90.0			
†	EBT	239	0.30	20.8	0.0	20.8	11.5	24.1	155.6		931	0	0	0	0.26			
1	EBL	234	09:0	9.99	0.0	9.99	27.0	40.0		115.0	416	0	0	0	0.56			
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	C	Intersection Summary	

m Volume for 95th percentile queue is metered by upstream signal.

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	4	†	~	>	↓	1	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	F	₹		r	₩.		r	441		F	444	
Traffic Volume (vph)	215	115	105	20	125	225	110	1325	09	150	1015	440
Future Volume (vph)	212	112	105	50	125	225	110	1325	09	120	1015	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost unite (s)	0.0	0. 0		0.0	0.7		0.0	5. 5		0.0	5. 5	
Earle Util. Factor	1.00	0.90		00,0	0.90		00.1	100		100	0.9	
Flab, ped/bikes	00.1	1.00		1.00	1.00		1.00	1.00		1.00	00:1	
T-L	1.00	0.93		1.00	06.0		1.00	66.0		1.00	0.95	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3127	3066		1637	3132		164	5034		3433	4670	
Flt Permitted	0.95	1.00		0.60	1.00		0.08	1.00		0.95	1.00	
Satd. Flow (perm)	3127	3066		1039	3132		138	5034		3433	4670	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	125	114	22	136	245	120	1440	65	163	1103	478
RTOR Reduction (vph)	0	87	0	0	202	0	0	က	0	0	25	0
Lane Group Flow (vph)	234	152	0	22	179	0	120	1502	0	163	1529	0
Confl. Peds. (#/hr)	5		က	က		2	-					_
Heavy Vehides (%)	15%	%/	% 6	10%	2%	5%	10%	2%	1%	5%	2%	%/
Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
Turn Type	Prot	ž		pm+pt	≨		pm+pt	≨		Prot	ΑN	
Protected Phases	7	4		က	œ		2	2		_	9	
Permitted Phases				∞			7					
Actuated Green, G (s)	14.9	28.1		21.0	17.1		62.6	51.1		12.9	52.5	
Effective Green, g (s)	14.9	28.1		21.0	17.1		62.6	51.1		12.9	52.5	
Actuated g/C Ratio	0.12	0.23		0.18	0.14		0.52	0.43		0.11	0.44	
Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
Vehicle Extension (s)	2.0	9.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	88	717		201	446		216	2143		369	2043	
√s Ratio Prot	c0.02	0.02		0.00	00.00		c0.05	0.30		0.05	00.33	
v/s Ratio Perm				0.02	9		0.24	0				
V/c Katio	0.60	0.27		0.11	0.40		0.56	0.70		44.0	0.75	
Discression Factor	0.6	0.75		4. 6	100		1 28	2.02		30.7	1 00	
Incremental Delay d2	0 8	0.0		200	1.2		2 6	10		2 0	26	
Delay (s)	53.6	37.3		41.9	48.0		27.1	16.5		513	30.8	
Level of Service	۵	۵		۵	۵		O	а		۵	O	
Approach Delay (s)		45.4			47.7			17.3			32.8	
Approach LOS		۵			۵			В			O	
Intersection Summary												
Clad Cotton Cotton			5		0000 MOH	O de leve	oi, a o		c			
HCM 2000 Volume to Capacity ratio	/ ratio		0.64	É	1007 IN	מאמ ס	200		2			
Actuated Cycle Length (s)			120.0	Sn	Sum of lost time (s)	ime (s)			24.0			
Intersection Capacity Utilization	_		72.8%	೦	ICU Level of Service	Service			ပ			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

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Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	4	†	Ļ	1	٠	*		
Movement	EBE	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	r	‡	₩.		r	¥_		
Traffic Volume (veh/h)	20	870	745	20	45	22		
Future Volume (Veh/h)	20	870	745	20	45	22		
Sign Control		Free	Free		Stop			
Grade	0	%0	%	0	% 8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	22	946	810	22	64	9		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right tum flare (veh)								
Median type	٢	TWLTL TWLTL	WLTL					
Median storage veh)		2	2					
Upstream signal (m)		99	169					
pX, platoon unblocked	0.87				06.0	0.87		
vC, conflicting volume	832				1338	416		
vC1, stage 1 conf vol					821			
vC2, stage 2 conf vol					517			
vCu, unblocked vol	522				206	47		
tC, single (s)	4.1				8.9	6.9		
tC, 2 stage (s)					2.8			
tF (s)	2.2				3.5	3.3		
p0 queue free %	86				8	8		
cM capacity (veh/h)	923				434	892		
Direction, Lane #	EB 1	EB2	EB3	WB1	WB2	SB 1	SB 2	
Volume Total	22	473	473	540	292	49	09	
Volume Left	22	0	0	0	0	49	0	
Volume Right	0	0	0	0	22	0	09	
cSH	923	1700	1700	1700	1700	434	892	
Volume to Capacity	0.02	0.28	0.28	0.32	0.17	0.11	0.07	
Queue Length 95th (m)	9.0	0.0	0.0	0.0	0.0	5.9	1.6	
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	14.3	9.3	
Lane LOS	∢					В	А	
Approach Delay (s)	0.2			0.0		11.6		
Approach LOS						മ		
Intersection Summary								
Average Delay			8.0					
Intersection Capacity Utilization			34.0%	ਹੁ	ICU Level of Service	Service	Þ	
Analysis Period (min)			15					

Without Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 25

Future Total AM (Phase 1) Upper Kerr Village (8124-01) Timings 14: Kerr Street & Rail Track

Lank Colume (wth) 495 500 Future Volume (wth) 495 500 Future Volume (wth) 495 500 Future Volume (wth) 495 500 Profected Phases 2 6 Switch Phases 2 6 Switch Phase 2 6 Switch Phase 2 6 Switch Phase 3 6 Switch Phase 4 6 Switch Phase 2 6 Switch Phase 2 6 Switch Phase 3 6 Switch Phase 3 6 Switch Phase 4 6 Switch Phase 5 6 Switch Phase 5 6 Switch Phase 6 6 Switch Phase 6 6 Switch Phase 7 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8 7 8	Traffe Volume (vph) 495 500 Turn Type Turn Turn Type	ane Group	NBT	SBT	94	
une Volume (vph) 495 500 une Volume (vph) 495 500 un Type	Inter Volume (vph) 495 500 Introverse NA	-ane Configurations	€-	4		
rure Volume (vph) 495 500 nure Volume (vph) 495 500 NA NA NA NA NA NA NA Inter Phases 2 6 4 mitted Phases 2 6 6 tich Phase 2 6 5.0 5.0 5.0 minum initial (s) 5.0 5.0 2.0 2.0 minum initial (s) 5.0 5.0 5.0 5.0 minum initial (s) 5.0 5.0 5.0 5.0 minum initial (s) 5.0 5.0 2.0 2.0 minum initial (s) 5.0 5.0 0.0 minum Gene (s) 138.0 138.0 38.0 minum Gene (s) 138.0 138.0 38.0 minum Gene (s) 0.0 0.0 0.0 minum Gene (s) 0.0 0.0 minum Gene (s) 3.0 3.0 3.0 minum Gene (s) 3.0 3.0 3.0 minum Gene (s) 0.0 0.0 minum Gene (s) 0.0	rue Volume (vph) 495 500 In Type In Third Phases In Third Phases In Third Phase I	rffic Volume (vph)	495	200		
Interpretation of the phases of the phase of the p	Types	ture Volume (vph)	495	200		
rector Phases 2 6 4 rmitted Phases 2 6 4 rmitted Phases 2 6 4 rector Phase 2 6 6 rich Phase 2 6 5.0 rich Phase 5 5.0 5.0 rich Phase 6 5.0 5.0 rich Phase 77.8% 22.0 rich Phase 77.8% 22.0 rich Phase 77.8% 22.0 rich Phase 6 77.8% 22.0 rich Phase 77.8% 22.0 rich	rected Phases 2 6 4 mitted Phases 2 6 4 mitted Phases 2 6 4 mitted Phases 2 6 6 ctor Phase 2 6 5.0 5.0 minum Initial (s) 5.0 5.0 5.0 5.0 minum Spit (s) 77.8% 22.0 22.0 22.0 minum Spit (s) 77.8% 22.0 2.0 2.0 2.0 2.0 minum Genes (s) 138.0 138.0 138.0 138.0 minum Genes (s) 0.0 0.0 0.0 0.0 Red Time (s) 0.0 0.0 0.0 0.0 Act Time (s) 2.0 2.0 2.0 2.0 Act Spit (s) 3.0 3.0 3.0 3.0 minum Gap (s) 3.0 3.0 3.0 0.0 Act Spit (s) 7.0 7.0 7.0 7.0 Act Spit (s) 7.0 7.0 7.0 7.0 Act Spit (s) 7.0 7.0 7.0 Act Spit	rn Type	NA	N A		
minted Phases 2 6 Attor Phase 2 6 Attor Phase 2 6 Attor Phase 5 5 6 5 6 Attor Phase 5 6 5 6 5 6 Attor Phase 6 5 6 5 6 Attor Phase 6 6 7 6 7 6 7 6 Attor Phase 6 7 7 8 8 7 7 8 8 22 8 Attor Phase 6 7 8 8 7 7 8 8 22 8 Attor Phase 6 7 8 8 7 7 8 8 22 8 Attor Phase 6 7 8 8 7 7 8 8 22 8 Attor Phase 6 7 8 8 7 7 8 8 22 8 Attor Phase 6 7 8 8 7 7 8 8 22 8 Attor Phase 6 7 8 8 7 8 8 22 8 Attor Phase 6 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	mitted Phases 2 6 ector Phase 2 6 ector Phase 2 6 for each of hase 3 6 5.0 5.0 finan Initial (s) 22,0 22,0 22,0 al Split (s) 40,0 40,0 40,0 40,0 40,0 40,0 40,0 40,	otected Phases	2	9	4	
tector Phase 2 6	ector Phase 2 6	rmitted Phases				
frich Phase frich Phase from Initial (s) 5.0 5.0 5.0 from Initial (s) 22.0 22.0 22.0 from Initial (s) 140.0 140.0 40.0 from Initial (s) 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	tch Phase immur Mitial (s) 5.0 5.0 5.0 immur Mitial (s) 22.0 22.0 22.0 al Split (s) 140.0 40.0 al Split (s) 17.8% 22.8 immur Mitial (s) 17.8% 22.8 immur Gene (s) 18.0 18.0 38.0 ow Time (s) 2.0 2.0 2.0 Red Time (s) 0.0 0.0 Act Time (s) 0.0 0.0 Act Time (s) 2.0 2.0 Act Time (s) 0.0 0.0 Act Time (s) 0.	tector Phase	2	9		
infum Initial (s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	imum split (s) 5.0 5.0 5.0 imum split (s) 22.0 22.0 22.0 40.0 22.0 22.0 40.0 40.0	vitch Phase				
inimum Split (s) 120 22.0 22.0 Indian Split (s) 140.0 40.0 Indian Green (s) 138.0 138.0 22% Indian Mine (s) 2.0 2.0 Indian Split (s) 0.0 0.0 In	imum Split (s) 220 22.0 imum Split (s) 140.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 5.0 0.0 40.0 0.0	nimum Initial (s)	2.0	2.0	5.0	
Ist Split (s) 140.0 140.0 40.0	al Splif (s) 140.0 40.0	nimum Split (s)	22.0	22.0	22.0	
Isl Split (%) 77.8% 77.8% 22%	il Split (%) 77.8% 77.8% 22% 22% 23% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 24% 25% 25% 25% 25% 25% 25% 25% 25% 25% 25	tal Split (s)	140.0	140.0	40.0	
bximum Green (s) 138.0 138.0 38.0 Red Time (s) 2.0 2.0 Red Time (s) 2.0 2.0 Red Time (s) 0.0 0.0 Ital Lost Time (s) 2.0 2.0 Ital Lost Time (s) 3.0 3.0 Ital Complex (s) 3.0 3.0 Ita	imum Green (s) 138.0 138.0 38.0 with me (s) 2.0 2.0 2.0 2.0 2.0 2.0 0.0 2.0 0.0	tal Split (%)	77.8%	77.8%	22%	
Now Time (s) 2.0 2	wow Time (s) 2.0 2.0 2.0 Aga Time (s) 0.0 0.0 I Lost Time (s) 0.0 0.0 Adultacy Carboniuse? 2.0 2.0 Adultacy Carboniuse? 2.0 2.0 Adultacy Carboniuse? 2.0 2.0 Adultacy Carboniuse? 3.0 3.0 3.0 Intum Gap (s) 3.0 3.0 3.0 Intum Gap (s) 4.0 4.0 Intum	aximum Green (s)	138.0	138.0	38.0	
Red Time (s)	Red Time (s) 0.0 0.0 Time Adjust (s) 0.0 0.0 All Cast Time (s) 2.0 2.0 Act ag Optimize? 3.0 3.0 Be Efrore Reduce (s) 0.0 0.0 Be Efrore Reduce (s) 0.0 0.0 And Max Max Max Max Max Max In Time (s) 7.0 7.0 7.0 7.0 7.0 Actation Callix (#hr) 0 0 Actation Callix (#hr) 0 0<	llow Time (s)	2.0	2.0	2.0	
st Time Adjust (s) 0.0 0.0 add.ag add.ag add-ag Optimizer add-ag Optimizer Add.ag Optimizer	Time Adjust (s)	-Red Time (s)	0.0	0.0	0.0	
Ital Lost Time (s) 2.0 2	al Lost Time (s) 2.0 2.0 Al Lag Author Optimize? 3.0 3.0 3.0 3.0 ide Extension (s) 3.0 3.0 3.0 inimin Gap (s) 3.0 3.0 0.0 0.0 inimin Gap (s) 3.0 3.0 3.0 ide In Reduce (s) 0.0 0.0 0.0 0.0 ide In Reduce (s) 0.0 0.0 0.0 0.0 0.0 ide In Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 ide In The Initiation Initiatian Initia	st Time Adjust (s)	0.0	0.0		
ad/Lag hide Lag Optimize? 3.0 3.0 3.0 3.0 hide Extension (s) 3.0 3.0 0.0 hide Extension (s) 0.0 0.0 0.0 hide Extension (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Alt agginize? 4. Lag Optimize? 3. 0. 3.0 3.0 3.0 inche Reduce (s) 3.0 3.0 inche Reduce Reduce (s) 3.0 3.0 inche Reduce	tal Lost Time (s)	2.0	2.0		
had-Lag Optimize? had-Lag Optimize? had-Lag Optimize? himum Gap (s) 10 3.0 3.0 10 0.0 0.0 10 0.0 0.0 10 0.0 0.0 10 0.0 0.0 10 0.0 0.0 10 0.0 0.0 11 0 1.0 11 0 1.0 12 destrain Calls (#hr) 13 0 0 0 0 14 Time (s) 15 0 0 0 0 0 16 case can Summary 17 0 0 0 0 18 case can Summary 18 case can Call (#hr) 19 0 0 0 0 0 19 0 0 0 0 0 10 0 0 0 0 0 10 0 0 0 0 0 10 0 0 0	4-tag Optimize? 41-tag Optimize? 3.0 3.0 3.0 42-tag Optimize? 3.0 3.0 3.0 42-tag Optimize (s) 3.0 3.0 43-tag Optimize (s) 3.0 3.0 43-tag Optimize (s) 3.0 3.0 44-tag Optimize (s) 3.0 3.0 45-tag Optimize (s) 3.0	ad/Lag				
hide Extension (s) 3.0 3.0 3.0 ine Before Reduce (s) 3.0 3.0 3.0 ine Before Reduce (s) 0.0 0.0 0.0 call Mode (s) 7.0 7.0 7.0 ins Time (s) 7.0 7.0 7.0 sh Don't Walk (s) 1.0 1.0 1.0 destrian Calls (#hr) 0 0 0 resection Summary cle Length: 180 tuated Cycle Length: 180	ide Extension (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ad-Lag Optimize?				
ininum Gap (s) 3.0 3.0 3.0 3.0 and setzing Reduce (s) 0.0 0.0 0.0 0.0 and setzing Reduce (s) 0.0 0.0 0.0 0.0 and setzing Reduce (s) 0.0 0.0 0.0 0.0 0.0 and setzing Reduce (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	imum Gap (s) 3.0 3.0 3.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8.0 8	hide Extension (s)	3.0	3.0	3.0	
ne Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	e Befrore Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	nimum Gap (s)	3.0	3.0	3.0	
ne To Reduce (s) 0.0 0.0 0.0 Max	e To Reduce (s) 0.0 0.0 0.0 all Mode Max Max Max Max At Time (s) 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 8.0 0 0 11.0 11.0 12.0 11.0 13.0 11.0 14.0 11.0 15.0 11.0 16. Length: 180 180 180 180 180 180 180 180	ne Before Reduce (s)	0.0	0.0	0.0	
all Node Max Max Max and Max m	Wax Max	ne To Reduce (s)	0.0	0.0	0.0	
six Time (s) 7.0 7.0 7.0 destinant (s) 7.0 7.0 7.0 destinant (six 11.0 11.0 11.0 11.0 11.0 destinant (six 11.0 11.0 11.0 11.0 10.0 0 0 0 0 0 0 0	k Time (s) 7.0 7.0 7.0 Fine (s) 7.0 7.0 7.0 Fine (s) 7.0 7.0 7.0 7.0 Fine (set in Calls (#hr) 0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	call Mode	Max	Max	Max	
sch Dortt Walk (s) 11.0 11.0 destrain Calls (#hr) 0 0 0 ersection Summary 0 0 0 0 learned Calls (#hr) 180 learned to phase 2.NBT and 6:SBT, Start of Green learned to phase 2.NBT and 6:SBT, Start of Green learned to phase 2.NBT and 6:SBT, Start of Green learned to phase 2.NBT and 6:SBT, Start of Green learned to phase 2.NBT and 6:SBT, Start of Green learned to phase 2.NBT and 6:SBT, Start of Green learned to phase 2.NBT and 6:SBT, Start of Green learned learn	it Dont Walk (s) 11.0 11.0 11.0 lestrian Calls (#hr) 0 0 0 0 reservan Calls (#hr) 0 0 0 0 reservan Calls (#hr) 10 0 0 0 lestrian Calls (#hr) 10 0 0 0 lestrian Calls (#hr) 10 0 0 0 lestrian Summary lest Length: 180 leaded Cycle Length: 180 leaded Cycle Length: 180 leaded Cycle Length: 180 leaded Cycle Calls (#hr) 190 leaded Cycle Cycle Calls (#hr) 190 leaded Cycle	alk Time (s)	7.0	7.0	7.0	
destrian Calls (#hr) 0 0 0 ersection Summary cle Length: 180 tuated Cycle Length: 180	lestrian Calls (#hh) 0 0 0 reaction Summary le Length: 180 nated Cycle Length: 180 e. 10 (%), Afferienced to phase 2:NBT and 6:SBT, Start of Green riral Cycle :45	ash Dont Walk (s)	11.0	11.0	11.0	
ersection Summary cle Length: 180 tuated Cycle	rsection Summary Je Length: 180 auted Cycle Length: 180 e.c. (0%), referenced to phase 2:NBT and 6:SBT, Start of Green rural Cycle: 45 rural Cycle: 45	destrian Calls (#/hr)	0	0	0	
cle Length: 180 studied Cycle Length: 180 st	le Length: 180 auted Cycle Length: 180 ees: 0 (0%), efferenced to phase 2:NBT and 6:SBT, Start of Green ural Cycle: 45 introl Type: Pretimed	ersection Summary				
tuated Cycle Length: 180	Jated Cycle Length: 180 each (10%), Referenced to phase 2.NBT and 6:SBT, Start of Green ural Cycle: 45 triol Type: Pretimed	cle Length: 180				
fset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	ebt. 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green ural Cycle: 45 itrol Type: Pretimed	tuated Cycle Length: 180				
tural Ovola: 45	ural Cycle: 45 itro Type: Pretimed	fset: 0 (0%), Referenced to	bhase 2:	NBT and (SSBT, S	start of Green
tural cycle: 40	ıtrol Type: Pretimed	Vatural Cycle: 45				
ntrol Type: Pretimed		ntrol Type: Pretimed				

Splits and Phases: 14: Kerr Street & Rail Track



Without Kerr St Improvements BA Group - EFS

Queues			Future Total AM (Phase 1)
14: Kerr Street & Rail Track	il Trac	~	Upper Kerr Village (8124-01)
	←	→	
ane Group	NBT	SBT	
Lane Group Flow (vph)	538	543	
//c Ratio	0.37	0.38	
Control Delay	7.7	7.8	
λueue Delay	25.0	0.0	
Fotal Delay	62.7	7.8	
Queue Length 50th (m)	57.3	58.5	
Queue Length 95th (m)	73.3	75.0	
ntemal Link Dist (m)	21.4	418.6	
urn Bay Length (m)			
Base Capacity (vph)	1442	1414	
Starvation Cap Reductn	896	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.14	0.38	
Information Cummons			
elsection sultimary			

Synchro 11 Report Page 27 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total AM (Phase 1) Upper Kerr Village (8124-01)

	1	†	/	-	ļ	4	•	•	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	495	0	0	200	0
Future Volume (vph)	0	0	0	0	0	0	0	495	0	0	200	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			2.0	
Lane Util. Factor								1.00			1.00	
Ē								1.00			1:00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1881			1845	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	538	0	0	543	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	238	0	0	543	0
Heavy Vehides (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	3%	%0
Turn Type								¥			A	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1414	
v/s Ratio Prot								0.29			00.29	
v/s Ratio Perm												
v/c Ratio								0.37			0.38	
Uniform Delay, d1								6.9			6.9	
Progression Factor								1.00			1:00	
Incremental Delay, d2								0.7			0.8	
Delay (s)								9.7			7.7	
Level of Service								<			∢	
Approach Delay (s)		0.0			0.0			9.7			7.7	
Approach LOS		∢			∢			∢			⋖	
Intersection Summary												
HCM 2000 Control Delay			7.7	H	M 2000 I	HCM 2000 Level of Service	service		A			
HCM 2000 Volume to Capacity ratio	city ratio		0.30									
Actuated Cycle Length (s)			180.0	Su	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	tion		29.6%	ੁ	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									
 c Critical Lane Group 												

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

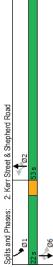
-	•	*	*	—	→	*	
Movement	田田	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	F	*	r	*	₩		
Traffic Volume (veh/h)	22	130	115	610	505	110	
Future Volume (Veh/h)	22	130	115	610	505	110	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
Hourly flow rate (vph)	27	140	124	929	543	118	
Pedestrians	2						
Lane Width (m)	3.6						
Walking Speed (m/s)	[
Percent Blockage	0						
Right tum flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
	1183	336	999				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1183	336	999				
tC, single (s)	8.9	7.0	4.2				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.3				
p0 queue free %	8	62	8				
cM capacity (veh/h)	159	651	889				
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
Volume Total	27	140	124	328	328	362	299
Volume Left	27	0	124	0	0	0	0
ne Right	0	140	0	0	0	0	118
	159	651	889	1700	1700	1700	1700
	0.17	0.21	0.14	0.19	0.19	0.21	0.18
Queue Length 95th (m)	4.5	6.2	3.7	0.0	0.0	0.0	0.0
Control Delay (s)	32.3	12.0	9.7	0.0	0.0	0.0	0.0
Lane LOS	Ω	ш	∢				
Approach Delay (s)	15.3		1.5			0.0	
Approach LOS	ပ						
Intersection Summary							
Average Delay			2.3				
Average Delay			37 3%	2	CIT I evel of Service	Springs	4
Analysis Period (min)			4, 4	2	2	3	
Aldysis enec (min)			2				

Synchro 11 Report Page 1 Without Kerr St Improvements BA Group - EFS

Timings 2: Kerr Street & Shepherd Road

Future Total PM (Phase 1)	r Village (8124-01)
Total PN	Upper Kerr V
Future	

	04					4				2.0	22.0	33.0	31%	29.0	3.0	1.0					3.0	3.0	0.0	0.0	None	7.0	11.0	0				
٠	SBT	‡	445	445	₹	9		9		18.0	28.2	75.0	69.4%	8.69	3.3	1.9	0.0	5.2			3.5	3.0	0.0	0.0	E W	10.0	13.0	2				
	SBL	y -	155	155	pm+pt	_	9	Ψ-		7.0	11.0	22.0	20.4%	18.0	4.0	0.0	0.0	4.0	Lead	Yes	2.5	3.0	0.0	0.0	None							
-	NBR	*	110	110	Perm		2	2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	E Mi	10.0	13.0	2				
-	NBT	‡	230	530	ΑN	2		2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	E W	10.0	13.0	2				
	WBT	æ.	0	0	Ν	00		∞		2.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0				
•	WBL	<i>y</i> -	100	100	Perm		∞	∞		2.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0			- -	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Fotal Split (s)	Total Split (%)	Maximum Green (s)	rellow Time (s)	All-Red Time (s)	ost Time Adjust (s)	Fotal Lost Time (s)	-ead/Lag	-ead-Lag Optimize?	/ehide Extension (s)	Minimum Gap (s)	lime Before Reduce (s)	lime To Reduce (s)	Recall Mode	Nalk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	ntersection Summary	Cycle Length: 108	Actuated Cycle Length: 49.1	Vatural Cycle: 65



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Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Quenes

2. Kerr Street & Shepherd Boad	apherd	Road					Upper Kerr Village (8124-01)
100000000000000000000000000000000000000	2	5					() - P
	-	ţ	-	4	۶	→	
Lane Group	. WBL	WBT	NBT	. NBR	SBL	SBT	
Lane Group Flow (vph)	103	149	546	113	160	459	
v/c Ratio	0.41	0.23	0.40	0.17	0.26	0.21	
Control Delay	23.4	0.8	12.5	3.7	4.9	4.6	
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.1	
Total Delay	23.4	0.8	12.5	3.7	5.2	4.6	
Queue Length 50th (m)	9.7	0.0	16.6	0.0	4.1	7.1	
Queue Length 95th (m)	20.9	0:0	31.9	9.7	11.2	14.8	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	794	1091	3385	1471	826	3574	
Starvation Cap Reductn	0	0	0	0	348	1631	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.14	0.16	0.08	0.31	0.24	
Intersection Summary							

Synchro 11 Report Page 3 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total PM (Phase 1)
Upper Kerr Village (8124-01)

Robin Controller EBI EBI EBI CBI Th Th <th></th> <th></th> <th>,</th> <th></th>			,										
1	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
100 100 145 0 530 110 155 445 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 0.95 1.00 0.95 1.00 1.00 1.00 100 0.95 1.00 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 0.95 1.00 1.00 100 1.00 1.00	Lane Configurations	je.	2,		K	2,		r	*	*	je.	*	•
1900 1900	Traffic Volume (vph)	0	.0	0	100	0	145	0	230	110	155	445	
1900 1900	Future Volume (vph)	0	0	0	100	0	145	0	530	110	155	445	O
100 1,00 1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
1,00	Lane Util. Factor				1.00	1.00			0.95	1.00	0.1	0.95	
100 085 100 100 100 100 100 100 100 100 100 10	Frpb, ped/bikes				1.00	0.97			1.00	0.97	0.1	9:1	
1.00	Flpb, ped/bikes				0.98	1.00			1.00	1.00	0.0	0.0	
1717 1718 1719 1710					1.00	0.85			00.1	0.85	0.1	9.1	
1717 1538 3539 1943 1943 1940 3574 1368 1538 1539 1943 1943 1940 3574 1097 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0	Fit Protected				0.95	1.00			1.00	1.00	0.95	9:10	
1,000	Satd. Flow (prot)				1717	1538			3539	1543	1804	3574	
0.97 0.97 <td< td=""><td>FIt Permitted</td><td></td><td></td><td></td><td>0.76</td><td>1.00</td><td></td><td></td><td>1.00</td><td>0.1</td><td>0.36</td><td>1.00</td><td></td></td<>	FIt Permitted				0.76	1.00			1.00	0.1	0.36	1.00	
0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97	Satd. Flow (perm)				1368	1538			3539	1543	684	3574	
0 0 0 103 0 149 0 546 113 160 459 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
0 0 0 0 103 28 0 0 646 44 160 459 5 6 1 15 15 15 5 5 5 5 5 5 6 6 6 6 6 6	Adj. Flow (vph)	0	0	0	103	0	149	0	546	113	160	459	O
0 0 103 28 0 546 44 160 459 5 0% 0% 3% 0% 1% 2% 0% 1% 0	RTOR Reduction (vph)	0	0	0	0	121	0	0	0	69	0	0	0
5 15 15 5 5 5 5 7 7 8 1% 0% 0% 1% 0% 0% 0% 0% 0% 0% 0% 0%	Lane Group Flow (vph)	0	0	0	103	28	0	0	246	44	160	459	C
0% 0% 0% 1% 2% 0% 1% 0<	Confl. Peds. (#/hr)	2		15	15		2			2	2		
Perm NA Perm NA Perm NA Perm Pri NA Perm P	Heavy Vehides (%)	%0	%0	%0	3%	%0	1%	%0	1%	2%	%0	1%	%0
Perm NA Perm NA Perm Phypt NA 4 8 2 2 2 6 6 10	Bus Blockages (#/hr)	0	0	0	0	က	0	0	2	0	0	0	
4 8 8 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Turn Type	Perm			Perm	¥		Perm	¥	Perm	pm+pt	Ν	Perm
4 8 8 2 2 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Protected Phases		4			∞			2		~	9	
9.2 9.2 19.0 19.0 30.6 3 9.2 9.2 19.0 19.0 30.6 3 9.2 9.2 9.2 19.0 19.0 30.6 3 9.2 9.2 9.2 19.0 19.0 30.6 3 9.2 9.2 9.2 19.0 19.0 30.6 3 9.2 4.0 4.0 5.2 5.2 4.0 2.6 28 1372 598 2.5 2.5 0.02 0.02 0.015 0.04 0.00 0.02 0.04 0.07 0.27 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Permitted Phases	4			∞			2		2	9		w.
92 92 192 190 306 306 306 306 306 306 306 306 300 300	Actuated Green, G (s)				9.5	9.5			19.0	19.0	30.6	30.6	
0.19 0.19 0.39 0.80 0.80 0.80 0.80 0.80 0.80 0.80 0.8	Effective Green, g (s)				9.5	9.5			19.0	19.0	30.6	30.6	
10	Actuated g/C Ratio				0.19	0.19			0.39	0.39	0.62	0.62	
3.0 3.0 3.5 2.5 2.5 2.8 1372 5.96 2.5 2.8 1372 5.96 0.02 0.015 0.014 0.08 0.010 0.04 0.09 0.10 0.10 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	Clearance Time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
256 288 1372 598 600 2 0.02 0.015 500 2 0.03 0.12 0.40 0.10 0.40 0.07 0.27 0 1.0 0.1 0.1 0.2 0.1 0.0 1.00 1.0 0.1 0.2 0.1 0.0 1.00 1.0 0.1 0.2 0.1 0.0 1.00 1.0 0.1 0.2 0.1 0.0 1.00 1.0 0.1 0.2 0.1 0.0 1.00 1.0 0.1 0.2 0.1 0.2 0.1 0.2 18.5 16.6 1.1.1 9.5 4.2 8 B B A A A A 9.2 HCM 2000 Level of Service A 15. ICU Level of Service A 16. ICU Level of Service A 17. In the service A 18. In the service A 19.	Vehicle Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
0.002 0.015 0.019 0.019 0.019 0.019 0.02 0.013 0.012 0.02 0.013 0.012 0.040 0.01 0.02 0.012 0.02 0.012 0.012 0.012 0.02 0.0	Lane Grp Cap (vph)				526	588			1372	298	009	2231	
0.00 0.00	v/s Ratio Prot				0	0.02			00.15		90.04	0.13	
175 165 109 9.5 4.0 1.00	v/s Ratio Perm				00:08					0.03	0.12		
17.5 16.5 10.5 10.0 1.00 1.00 1.00 1.00 1.00 1.	v/c Katio				0.40	0.10			0.40	0.07	0.27	0.21	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d I				0.7	0.0			0.0	o. 6	0.4	0.4	
1.0 U.1 0.2 1 0.2 1 0.2 1 0.2 1 0.2 1 0.2 1 0.2 1 0.2 1 0.2 1 0.3	Progression Factor				0.1	9.1			00.1	0.1	3.5	3.5	
10.0 17.4 10.8 A A B B A A A B B B A B B B A A A B	Incremental Delay, dz					- c			7 7	- c	0.7	- ·	
0.0 B B B A A A A A A A A B B B B B B B B	Delay (s)				18.5	0.0			= '	G. 9	4.2	4.0	
0.0 174 108 4, A B B B A carrier atio 0.37 CU Level of Service A 13.2 A 13.2 A 14.0 Sum of lost time (s) 15.1 A	Level of Service				m	m :			m !	⋖	⋖	∢ :	
A B B B 9.2 HCM 2000 Level of Service A A 19.0 Sum of lost time (s) 13.2 2ation 54.6% ICU Level of Service A 15	Approach Delay (s)		0.0			17.4			10.8			4.1	
9.2 HCM 2000 Level of Service 0.37 49.0 Sum of lost time (s) 2.45% ICU Level of Service 1.54.6% 1.00 Level of Service 1.55	Approach LOS		⋖			ш			മ			⋖	
9.2 HCM 2000 Level of Service 0.37 49.0 Sum of lost time (s) 2.45% ICU Level of Service 1.54.6% ICU Level of Service 1.54.6% ICU Level of Service 1.54.6% ICU Level of Service 1.55	Intersection Summary												
necity ratio 0.37 49.0 Sum of lost time (s) zation 54.6% 15 ICU Level of Service	HCM 2000 Control Delay			9.5	ĭ	3M 2000	Level of S	Service		∢			
49.0 Sum of lost time (s) zation 54.6% ICU Level of Service	HCM 2000 Volume to Capa	city ratio		0.37									
Utilization 54.6% 15	Actuated Cycle Length (s)			49.0	S	ım of lost	time (s)			13.2			
	Intersection Capacity Utiliza	ıtion		24.6%	೦	U Level o	of Service			∢			
	Analysis Period (min)			4									

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

*	SBR	*	80	80	Perm		00	00		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	35						
→	SBT	*	240	240	¥	∞		∞		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	32						
۶	SBL	*	260	260	pm+pt	က	∞	က		7.0	10.0	16.0	13.3%	13.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None									
*	NBR	*	235	235	Perm		4	4		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	32						
←	NBT	*	155	155	Ϋ́	4		4		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	32						
•	NBL	F	150	120	pm+pt	7	4	7		7.0	10.0	16.0	13.3%	13.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None									
4	WBR	*-	445	445	Perm		2	2		25.0	30.9	54.0	45.0%	48.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15						
ţ	WBT	‡	932	932	ΑN	2		2		25.0	30.9		4					5.9		Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15				of Green		
>	WBL	*	300	300	pm+pt	2	2	2		7.0	10.0	12.0	10.0%	9.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None							TL, Start		
>	EBR	*	135	135	Perm		9	9		25.0	30.9	54.0	45.0%	48.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15				and 6:EB		
†	EBT	‡	595	292	Ϋ́	9		9		25.0	30.9		7					5.9		Yes	5.5	3.0	0.0	0.0	Q-Min	7.0	14.0	15				2:WBTL		
1	EB	*	85	82	pm+pt	Ψ-	9	~		7.0	10.0	12.0	10.0%	9.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None							to phase		dinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated

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Synchro 11 Report Page 5 Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 1) Upper Kerr Village (8124-01) Queues 3: Kerr Street & Speers Road

	•	†	1	-	ţ	4	•	-	•	۶	→	*
Lane Group	BB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	88	979	142	316	984	468	158	163	247	274	253	8
v/c Ratio	0.28	0.39	0.18	0.63	0.56	0.48	0.52	0.52	0.54	0.71	0.72	0.24
Control Delay	10.8	22.8	10.0	19.3	23.7	3.7	34.1	49.9	9.4	42.3	57.3	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	22.8	10.0	19.3	23.7	3.7	34.1	49.9	9.4	42.3	57.3	9.6
Queue Length 50th (m)	10.9	55.5	9.4	33.2	81.9	0.0	26.8	34.9	0.0	50.1	9.99	0.0
Queue Length 95th (m)	22.0	91.6	21.0	57.7	119.8	19.3	39.3	51.8	20.1	67.3	78.7	12.4
Internal Link Dist (m)		138.4			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	340	1587	783	201	1767	975	326	495	574	384	501	458
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.39	0.18	0.63	0.56	0.48	0.48	0.33	0.43	0.71	0.50	0.18
Intersection Summary												

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	1	+	<u>/</u>	>	Ļ	4	•	—	•	۶	→	*
Movement	EBLE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡	*	r	44	*-	<i>y-</i>	+	X _	r	+	R _
Traffic Volume (vph)	85 6	262	135	300	935	445	150	155	235	260	240	80
Future Volume (vph)		392	132	300	932	442	120	155	235	260	240	8
Ideal Flow (vphpl)		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	1.00 0	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes		8	0.97	1.00	1.00	0.94	1.00	1.00	0.93	1.00	1.00	0.93
Flpb, ped/bikes	1.00	0.1	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.98	1.00	1.00
Fit		8	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		511	1560	1750	3539	1485	1766	1877	1486	1753	1900	1501
Flt Permitted		1.00	1.00	0.33	1.00	1.00	0.37	1.00	1.00	0.48	1.00	1.00
Satd. Flow (perm)	.,	3511	1560	909	3539	1485	269	1877	1486	894	1900	1501
Peak-hour factor, PHF	0.95 0	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)		979	142	316	984	468	158	163	247	274	253	84
RTOR Reduction (vph)		0	78	0	0	234	0	0	206	0	0	99
Lane Group Flow (vph)	89	929	22	316	984	234	128	163	4	274	253	16
Confl. Peds. (#/hr)			2	2		8	32		32	32		35
Heavy Vehicles (%)	%0	5%	%0	3%	5%	5%	1%	%0	%	%	%0	%0
Bus Blockages (#/hr)	0	4	0	0	0	0	0	3	0	0	0	0
Turn Type	pm+pt	Ä	Perm	pm+pt	Ν	Perm	pm+pt	Ν	Perm	pm+pt	¥	Perm
Protected Phases	-	9		2	2		7	4		က	∞	
Permitted Phases			9	2		2	4		4	∞		∞
Actuated Green, G (s)		54.3	54.3	6.07	59.9	59.9	31.8	20.1	20.1	36.0	22.2	22.2
Effective Green, g (s)		54.3	54.3	70.9	29.9	29.9	31.8	20.1	20.1	36.0	22.2	22.2
Actuated g/C Ratio	C	0.45	0.45	0.59	0.50	0.50	0.27	0.17	0.17	0.30	0.18	0.18
Clearance Time (s)		5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)		5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)		1588	705	487	1766	741	288	314	248	366	321	277
v/s Ratio Prot		0.18		c0.02	0.28		0.02	0.09		60.00	0.13	
v/s Ratio Perm			0.0	c0.31		0.16	0.0		0.03	c0.14		0.01
v/c Ratio		0.39	0.09	0.65	0.56	0.32	0.55	0.52	0.17	0.75	0.72	90.0
Uniform Delay, d1		21.9	18.8	13.3	20.8	17.9	32.9	45.5	42.8	35.7	46.0	40.3
Progression Factor		0.95	2.51	1.00	9.5	97;	1.00	9.5	1.00	1.00	1.00	1.00
Incremental Delay, d2		O. 2	0.7	7.0	ر. د. د	- 6	7.1	t	4.0	- :	9. 5	o ç
Delay (s)	7 1.71	4. 0	4. 7	9.C	- 7	0.6	o. 75	U. /	7.54	4.54	0.50	4.04
Level of Service	מ	ہ د	ב	ם	٥	מ	ב	2 0	ם	ם	47.0	2
Apploadi Delay (s)	7	0.47			7.07			6.24			7. (
Approach LOS		S			S			<u> </u>			<u> </u>	
Intersection Summary												
HCM 2000 Control Delay			28.9	至	HCM 2000 Level of Service	Level of	Service		O			
HCM 2000 Volume to Capacity ratio	city ratio		0.71									
Actuated Cyde Length (s)			120.0	ଊ	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	lion		83.3%	೦	ICU Level of Service	of Service			ш			
Analysis Period (min)			5									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

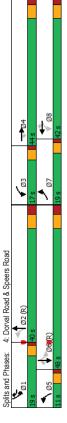
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Timings 4: Dorval Road & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

*	SBR	X _	375	375	Perm		9	9		20.0	40.0	48.0	40.0%	41.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	26.0	2			
→	SBT	44	695	695	Ϋ́	9		9		20.0	40.0	48.0	40.0%	41.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	26.0	2			
۶	SBL	F	270	270	pm+pt	-	9	τ-		7.0	11.0	19.0	15.8%	15.0	3.0	1.0	0:0	4.0	Lead	Yes	3.0	3.0	0.0	0:0	None						
←	NBT	₩.	625	625	₹	2		7		20.0	40.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	26.0	2			
•	NBL	F	65	65	pm+pt	2	2	2		7.0	11.0	11.0	9.5%	7.0	3.0	1:0	0:0	4.0	Lead	Yes	3.0	3.0	0.0	0.0	None						
4	WBR	¥.	510	510	vo+mq	~	∞	-		7.0	11.0	19.0	15.8%	15.0	3.0	1:0	0:0	4.0	Lead	Yes	3.0	3.0	0.0	0.0	None						
ļ	WBT	₩	069	069	₹	∞		∞		10.0	45.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	28.0	2			
\	WBL	F	170	170	pm+pt	က	∞	ო		7.0	11.0	17.0	14.2%	13.0	3.0	1.0	0.0	4.0	Lead	Yes	3.0	3.0	0.0	0.0	None						
*	EBR	*	20	20	Perm		4	4		10.0	45.0				4.0			7.0							_	7.0	28.0	2			
†	EBT	++	510	210	ΑN	4		4		10.0	45.0	44.0	36.7%	37.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	28.0	2			
4	EBL	16	415	415	Prot	7		7		7.0	11.0	19.0	15.8%	15.0	3.0	1.0	0.0	4.0	Lead	Yes	3.0	3.0	0.0	0.0	None						
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120

Actuated Oycle Length: 120 Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green Natural Oycle: 115 Control Type: Actuated-Coordinated



Without Kerr St Improvements BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	1	†	>	\	ļ	4	•	←	۶	→	•	
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Group Flow (vph)	451	554	22	185	750	554	71	761	293	755	408	
v/c Ratio	0.92	0.50	0.09	0.47	0.78	0.77	0.25	0.80	0.89	0.58	0.51	
Control Delay	77.3	35.6	0.3	31.8	54.8	26.5	21.2	47.2	61.8	16.3	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	77.3	35.6	0.3	31.8	54.8	26.5	21.2	47.2	61.8	16.3	5.6	
Queue Length 50th (m)	~59.7	9.99	0.0	29.2	8.77	42.3	9.1	86.0	30.6	63.5	6.4	
Queue Length 95th (m)	#91.8	73.1	0.0	53.4	108.5	87.4	17.7	108.8	#100.9	28.0	3.2	
Internal Link Dist (m)		412.3			472.1			621.6		494.4		
Turn Bay Length (m)	0.09		0.09	85.0		55.0	0.07		110.0			
Base Capacity (vph)	488	1121	289	412	1034	720	284	975	328	1297	807	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reducth	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.92	0.49	0.00	0.45	0.73	0.77	0.25	0.78	0.89	0.58	0.51	
0												

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

Movement EB EB EB WE WE WE WE WE	ns 415		W 1 2 2 5 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	W 2 2 1 1 0 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1		NBT 625 625 625 625 625 625 625 626 626	75 75 1900 0 0 0 0	SBL 270 270 270 1900 4.0 1.00 1.00 1.00 0.095 1787 0.095 293 293 1787	SBT 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00	SBR 375 375 375 375 375 375 375 375 375 375
1,	ns 415		0 1 1 2 2 6 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	[↑↑ 625 625 625 100 7.0 1.00 1.00 1.00 3516 1.00 3516 1.00 3516 1.00 3516 1.00	75 75 1900 0.92 82 82 0 0	270 270 270 1900 4.0 1.00 1.00 1.00 0.14 267 0.14 267 0.14 267 1.00 1.00 1.00 0.14 267 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	695 695 695 695 7.0 7.0 1.00 1.00 1.00 3574 0.92 755 755 755 765 765	375 375 375 375 375 375 375 100 100 100 100 100 100 100 100 100 10
415 510 50 170 690 510 65 625 75 270 695 6	oh) 415 oh) 416 1900 1000 100 100 100 100 100 1		2 2 0 1 1 1 1 2 2 2 0	£ 10101515		625 625 1900 7.0 1.00 1.00 3516 1.00 3516 0.92 679 8 8 753 1%	75 75 75 1900 0092 82 0 0	270 270 1900 4.0 1.00 1.00 1.00 1.00 0.95 1787 0.14 267 263 293 293	695 695 695 695 695 7.0 7.0 7.0 1.00 1.00 1.00 3574 1.00 3774 1.00	375 375 375 375 375 100 1.00 1.00 1.00 1.00 1.00 1.00 1.00
141 510 50 170 690 510 65 625 75 270 695 1900	0h) 1416 1900 1900 100 1.00 1.00 1.00 1.00 1.00		2 0 1 1 1 1 2 2 2 0	, to		1900 7.0 1.00 0.38 1.00 3516 3516 3516 3516 3516 3516 3516 3516	75 1900 0.92 82 0 0 0	270 1900 1.00 1.00 1.00 0.95 1787 0.14 267 293 0 293 1787	695 1900 7.0 7.0 0.95 1.00 1.00 3574 1.00 3574 0.92 755 0 755	375 1900 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0
1900 1900	1900 4.0 1.00 1.00 1.00 0.95 3433 PHF 0.95 (vph) 451 (vph) 451 (vph) 2%		£ 0 - 1 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	£ 70707 £ 7		7.0 0.95 1.00 1.00 1.00 3516 0.92 679 8 8 8 8 753 100 0.92 679	0.92 82 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	1900 4.0 1.00 1.00 1.00 0.95 0.14 267 287 0.92 293 0	1900 7.0 7.0 1.00 1.00 1.00 3574 0.92 755 0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1900 7.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00
40 7.0 7.0 4.0 7.0 7.0 7.0 4.0 7.0 7.0 7.0 7.0 4.0 7.0 7.0 7.0 4.0 7.0 1.00 0.99 1.00 1.00 0.99 1.00	4 0 0.97 1.00 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0		0 + + + + & + & 0	£ 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5		7.0 0.95 1.00 1.00 0.98 1.00 3516 0.92 679 8 8 8 753	0.92 82 0 0 0 0 0,04	4.0 1.00 1.00 1.00 0.95 1787 0.14 267 0.02 293 0 293 1787	7.0 0.95 1.00 1.00 1.00 3574 1.00 3574 0.92 755 755	7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1
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1.00 1.00 0.85 1.00 1.03 1.00 0.93 1	0.00 0.95 3433 9433 PHF 0.92 (vph) 451 (vph) 451 8,00 2,00 2,00 2,00 2,00 2,00 2,00 2,00			5 e	- 0 - 0	0.98 1.00 3516 1.00 3516 0.92 679 8 753 753	0.92 0 0 0	1.00 0.95 1787 0.14 267 0.92 293 0 293 1%	1.00 1.00 3574 1.00 3574 0.92 755 0 755 0 1%	1.00 1.00 1.00 1.00 1.00 229 408 229 179 1 Perm
0.99 1.00 1.00 0.40 1.00 0.31 1.00 0.49 1.00 0.95 1.00 0.95 1.00 0.40 1.00 0.31 1.00 0.41 1.00 0.44 1.00 0.31 1.00 0.44 1.00 0.34 1.00 0.31 1.00 0.44 1.00 0.34 1.00 0.31 1.00 0.44 1.00 0.34 1.00	(vph) 2%		- 8 - 8 0	- 11 1 1 E	2 4 0 1 0	1.00 3516 1.00 3516 0.92 679 8 8 753 753	0.92 0 0 0	1787 1787 0.14 267 0.92 293 0 293 178	1.00 3574 1.00 3574 0.92 755 0 755 1%	1.00 1.599 1.00 1.599 4.08 229 1.79 1.79
0.92	3433 0.95 3433 PHF 0.92 (vph) 451 (vph) 451 6		2 - 8 0	E - 1 E	<u> </u>	3516 1.00 3516 0.92 679 8 8 753 753	0.92 82 0 0 0 0	1/8/ 0.14 267 293 293 0 293 1%	35/4 1.00 3574 0.92 755 0 755 1%	1599 1.00 1.00 229 408 179 179 0
0.95 1.00 1.00 0.40 1.00 0.33 1.00 0.31 1.00 0.41 1.00 0.43 3.5574 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.95 3433 : 3423 : PHF 0.92 451 (vph) 451 (vph) 2%		- x 0		g	1.00 3516 0.92 679 8 753 1%	0.92 82 0 0 0	0.14 267 293 293 0 293 1%	1.00 3574 0.92 755 0 755 1%	1.00 1599 0.92 408 229 179 179 0
3433 3560 1556 743 3546 1881 597 3516 267 3544 615 554	9433 PHF 0.92 451 (vph) 451 (c) 2% 5 5 %				The state of the s	3516 0.92 679 8 8 753 753	0.92 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	267 0.92 293 0 293 1%	35/4 0.92 755 0 755 1%	1599 0.92 408 229 179 1% 0 0
Main Part Main	or, PHF 0.92 (451 on (vph) 0 wy (vph) 451 fm) 5 (%) 2%			e i		0.92 679 8 753 1%	0.92	0.92 293 0 293 1%	0.92 755 0 755 1%	0.92 408 229 179 1% 0 0 Perm
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10	0 451 5 2%			E E	nd nd	753 1% 0	0 0 %	293	1% 0 0 NA	179 179 180 180 179
451 554 17 185 750 511 71 753 0 293 755 2% 1% 2% 1% 1% 1% 0% 1% 1% 1% 1% 1% 1% Prof NA Perm pm+pt NA pm+ov pm+pt NA pm+pt NA pm+ov 17 1 37.7 37.7 44.2 32.4 486 38.1 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 38.1 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 38.1 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 38.1 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 38.1 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 38.1 32.3 52.5 42.7 12.1 48.1 0.31 0.37 0.27 0.44 0.32 0.27 0.44 0.38 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	451 5 2%			Ed.	μď	753 1% 0	0 %	293	755 1% 0	179 1%
2% 1% 2% 1% 1% 1% 0% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	2%			ig .	l d	% O N	1%	1%	% 0 2	1% 0 Perm
2% 1% 2% 1%<	5%			ig .	ם	% O 4N	%	%	0 44	Perm ,
NA Perm pm+pt NA pm+opt NA Pm-pt NA Pm-				둽		0	2		0 5	Pem
Prod NA Perod NA pm+pt NA Pm Pm <t< td=""><td>0</td><td></td><td></td><td><u>e</u></td><td></td><td>VIV</td><td>0</td><td>0</td><td>< Z</td><td>Perm</td></t<>	0			<u>e</u>		VIV	0	0	< Z	Perm
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17.1 37.7 4 8 8 2 5 6 17.1 37.7 37.7 44.2 32.4 486 381 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 381 32.3 52.5 42.7 17.1 37.7 37.7 44.2 32.4 486 381 32.3 52.5 42.7 4.0 7.0 7.0 4.0 7.0 4.0 7.0 7.0 4.4 0.36 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 4.0 7.0 7.0 7.0 4.0 7.0 4.0 7.0 4.0 7.0 7.0 7.0 4.0 7.0 4.0 7.0 5.0 3.4 28.5 26.8 40.6 31.4 29.2 40.8 28.4 31.6 5.0 7.0 7.0 7.0 7.0 8.3 7.0 6.5 5.0 8.3 4.1 7.0 8.3 7.0 6.5 5.0 7.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0 7.0 7.0 7.0 7.0 5.0	Protected Phases 7		>			2		_	9	
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17.1 37.7 37.7 44.2 32.4 48.6 38.1 32.3 52.5 42.7 4.7 37.7 44.2 32.4 48.6 38.1 32.3 52.5 42.7 4.7 0.1 3.0 3.7 37.0 4.4 0.32 0.27 0.44 0.32 0.27 0.44 0.32 0.27 0.44 0.32 0.27 0.45 0.32 0.27 0.44 0.32 0.25 0.21 0.21 0.21 0.21 0.21 0.21 0.21 0.21	17.1					32.3		52.5	42.7	42.7
0.14 0.31 0.37 0.27 0.41 0.32 0.27 0.44 0.38 0.30 0.30 0.27 0.44 0.38 0.30 0.30 0.27 0.41 0.35 0.30 0.30 0.30 0.30 0.30 0.30 0.30	17.1					32.3		52.5	42.7	42.7
4.0 7.0 7.0 4.0 7.0 4.0 4.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	0.14 0	0	0	0	O	0.27		0.44	0.36	0.36
3.0 5.0 5.0 5.0 3.0 5.0 5.0 5.0 489 1118 488 376 957 60.11 0.01 0.21 0.012 50.13 0.16 0.05 0.21 60.11 0.01 0.21 0.012 50.28 0.50 0.01 0.13 0.22 0.08 0.29 0.028 50.39 3.4 2.85 2.68 40.6 31.4 2.92 40.8 2.84 31.6 50.7 0.1 1.0 4.8 6.7 0.6 6.9 2.40 1.7 7.8 3.4 2.86 3.5 3.5 3.2 2.98 4.77 6.65 6.5 F	4.0					7.0		4.0	7.0	7.0
489 1118 488 376 957 640 247 946 322 12/1 c0.13 0.16 0.05 0.21 c0.11 0.01 0.21 0.012 0.21 0.092 0.50 0.03 0.49 0.78 0.80 0.29 0.80 0.91 0.59 50.8 33.4 28.5 28.8 40.6 31.4 29.2 40.8 28.4 31.6 1.00 1.00 1.00 1.44 1.20 0.83 1.00 1.00 1.49 0.46 23.0 0.7 0.1 1.0 4.8 6.7 0.6 6.9 24.0 1.7 73.8 34.2 28.6 39.6 53.5 32.7 29.8 47.7 66.5 16.2 E C C D D C C D E B 50.7 44.1 46.2 0.8 23.3 39.6 HCM 2000 Level of Service D activatio 0.90 Sum of lost time (s) 22.0 zation 85.4% ICU Level of Service E	3.0					2.0		3.0	2.0	2.0
60.13 0.16 0.005 0.27 0.011 0.011 0.21 0.012 0.21 0.028 0.02 0.02 0.03 0.49 0.78 0.80 0.29 0.80 0.91 0.59 0.80 0.91 0.59 0.80 0.91 0.48 0.28 0.80 0.29 0.80 0.91 0.59 0.80 0.91 0.48 0.48 0.80 0.29 0.80 0.91 0.48 0.48 0.48 0.48 0.48 0.48 0.48 0.48	(vph) 489		Ì			946		322	1271	268
0.92 0.50 0.01 0.13 0.22 0.08 0.02 0.02 0.08 0.02 0.02 0.03 0.03 0.03 0.03 0.03 0.03	c0.13			0		0.21		20.12	0.21	3
508 334 208 208 40.6 0.00 0.00 0.00 0.00 0.00 0.00 0.00						0		00.28	5	0.11
100 100 100 144 120 214 40.0 24.4 11.0 23.0 11.0 11.0 14.0 14.0 14.0 14.0 14.0 14	0.92					0.80		0.9	0.59	0.3
23.0 17.0 17.1 14.8 67 0.6 6.9 24.0 17.7 17.8 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	20.0					10.0		1 40	0.10	0.02
738 94.2 28.6 39.6 55.5 32.7 29.8 47.7 66.5 16.2 16.2 16.2 16.2 16.2 16.2 16.2 16.2	73.0					0 0		0.40	17	
E C C D D D C C D E B B	73.8					47.7		66.5	16.2	5.4
50.7 44.1 46.2 D D D D D D D D D D D D D D D D D D D	Service					۵		ш	m	⋖
D D D D D activity ratio 0.90 Sum of lost time (s) 22.0 Eation 86.4% ICU Level of Service E F			4			46.2			23.3	
39.6 HCM 2000 Level of Service 39.6 HCM 2000 Level of Service 0.90 Sum of lost time (s) 22 Idion 85.4% ICU Level of Service 15	Approach LOS	_		۵		۵			ပ	
39.6 HCM 2000 Level of Service 0.90 Sum of lost time (s) zation 85.4% ICU Level of Service 15.01 Sum of lost time (s) 15.02 Sum of lost time (s) 15.03 Sum of lost time (s)	Intersection Summary									
necity ratio 0.90 120.0 Sum of lost time (s) zation 85.4% 15.0 CU Level of Service 15 15	HCM 2000 Control Delay	39.6	HCM	2000 Level	of Service		۵			
120.0 Sum of lost time (s) zation 85.4% ICU Level of Service 15	HCM 2000 Volume to Capacity ratio	06:0								
Utilization 85.4%	Actuated Cycle Length (s)	120.0	Sumo	f lost time (s)		22.0			
	Intersection Capacity Utilization	85.4%	ICULe	evel of Serv	ige		ш			
	Analysis Period (min)	15								

Synchro 11 Report Page 9

Without Kerr St Improvements BA Group - EFS

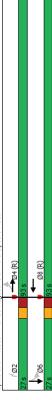
Without Kerr St Improvements BA Group - EFS

Volume seconds capacity, queue is theoretically infinite.
 Cueue shown is maximum after two cycles.
 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Timings Future Total PM (Phase 1) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

5: St. Augustine Drive & Speers Road	ve &	Seers I	≺oad				Upper Kerr VIIIage (8124-01)
	1	†	ţ	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	*	4₽	₩.	¥C	F	4	
Traffic Volume (vph)	9	820	1130	52	2	0	
Future Volume (vph)	10	820	1130	52	2	0	
Turn Type	Perm	ΑN	Ν Α	Perm	Perm	NA	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0	
Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%	
Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	C-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	to phase	4:EBTL a	and 8:WB	T, Start of	Green		
Natural Cycle: 55	Lo do cilo						
Corino I ype. Actuated-Cool diriated	nilated						

Splits and Phases: 5: St. Augustine Drive & Speers Road



Without Kerr St Improvements
BA Group - EFS
Page 11

 Clueues

 5: St. Augustine Drive & Speers Road
 Future Total PM (Phase 1)

 Lane Group
 EBI
 EBI
 WBT
 NBR
 SBI
 APP

 Lane Group Flow (vph)
 10
 880
 1187
 28
 10
 Pupper Kear Village (8124-01)

 w/c Ratio
 60
 0.03
 0.187
 2.9
 0.6
 0.05
 Control Delay
 1.0
 0.9
 2.9
 0.0
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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	4	†	~	-	↓	4	•	←	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>, -</u>	₩			₩				*	<u>,-</u>	\$	
Traffic Volume (vph)	9	820	52	0	1130	9	0	0	25	2	0	10
Future Volume (vph)	9	820	52	0	1130	9	0	0	22	2	0	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Lane Util. Factor	1.00	0.95			0.95				1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
Fit	1.00	1.00			1.00				98.0	1.00	0.85	
Fit Protected	0.95	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (prot)	1800	3551			3569				1644	1805	1615	
Fit Permitted	0.23	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (perm)	439	3551			3569				1644	1805	1615	
Peak-hour factor, PHF	96.0	96:0	96.0	96:0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0
Adj. Flow (vph)	9	854	56	0	1177	10	0	0	56	2	0	10
RTOR Reduction (vph)	0	_	0	0	0	0	0	0	25	0	10	0
Lane Group Flow (vph)	9	879	0	0	1187	0	0	0	Ψ.	2	0	0
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehicles (%)	%0	1%	4%	%0	1%	%0	%0	%0	%0	%0	%0	%0
Turn Type	Perm	AN			AN				Perm	Perm	¥	
Protected Phases		4			∞						9	
Permitted Phases	4								2	9		
Actuated Green, G (s)	104.0	104.0			104.0				3.8	3.8	3.8	
Effective Green, g (s)	104.0	104.0			104:0				3.8	3.8	3.8	
Actuated g/C Ratio	0.87	0.87			0.87				0.03	0.03	0.03	
Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
Lane Grp Cap (vph)	380	3077			3093				52	22	51	
v/s Ratio Prot		0.25			c0.33						0.00	
v/s Ratio Perm	0.02								0.00	00.00		
v/c Ratio	0.03	0.29			0.38				0.02	0.09	0.01	
Uniform Delay, d1	1.	1.4			1.6				56.3	56.4	56.3	
Progression Factor	0.61	0.57			1.78				1.00	1.00	1.00	
Incremental Delay, d2	0.1	0.2			0.3				0.1	0.7	0.0	
Delay (s)	0.8	1.0			3.2				56.4	57.1	56.3	
Level of Service	A	∢			∢				ш	ш	ш	
Approach Delay (s)		1.0			3.2			56.4			26.6	
Approach LOS		∢			∢			ш			ш	
Intersection Summary												
HCM 2000 Control Delay			3.3	Ĭ	3M 2000	HCM 2000 Level of Service	Service		<			
HCM 2000 Volume to Capacity ratio	city ratio		0.37									
Actuated Cycle Length (s)			120.0	ร	Sum of lost time (s)	time (s)			12.2			
Intersection Capacity Utilization	ion		47.2%	೦	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									
Critical Lane Group												

Critical Lane Group

Without Kerr St Improvements BA Group - EFS

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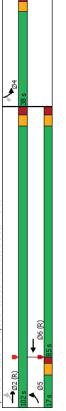
Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

•	SBR	R. R.	420	450	Perm		4	4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							Green		
۶	SBL	*	10	10	Prot	4		4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							, Start of		
ţ	WBT	₩.	1295	1295	ΑN	9		9		38.0	47.6	85.0	%2.09	78.4	3.7	2.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				nd 6:WBT		
†	EBT	‡	730	730	ΑN	2		7		38.0	47.6	102.0	72.9%	95.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				EBTL ar		
1	EBL	*	265	265	pm+pt	2	2	2		0.9	12.0	17.0	12.1%	11.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None							to phase 2		rdinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue

₹02 (R)



Without Kerr St Improvements BA Group - EFS

Future Total PM (Phas	4venue Upper Kerr V
Queues	6: Speers Road/Cornwall Road & Cross Ave

o: speers Road/Cornwall Road & Cross Avenue	LI MAII	soad &	Cross	Avenu	e	Opper Neil Village (0124-01)
	1	†	ļ	۶	•	
Lane Group	EBL	E	WBT	SBL	SBR	
Lane Group Flow (vph)	276	760	1365	9	438	
v/c Ratio	0.64	0.26	0.65	0.05	0.80	
Control Delay	25.3	3.7	21.1	54.3	30.4	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	25.3	3.7	21.1	54.3	30.4	
Queue Length 50th (m)	29.5	21.0	120.8	5.6	21.2	
Queue Length 95th (m)	62.9	36.2	161.1	7.8	40.0	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	430	2924	2109	415	829	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.26	0.65	0.02	0.51	
Intersection Summary						

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HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

figurations FBI EBI WBT WBF SBI figurations 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Movement Lane Configurations Traffic Volume (vph) Future Volume (vph)	0	ŀ	F0///				
figurations (vph) 266 730 1295 15 10 420 1000 1000 1295 15 10 420 1000 1295 15 10 420 1200 1200 1200 1200 1200 1200 12	Lane Configurations Traffic Volume (vph) Future Volume (vph)	EBL	EBI	WDI	WBR	SBL	SBR	
lume (yph) 286 730 1295 15 10 420 (yph) 286 730 1295 15 10 420 (yph) 1900 1900 1900 1900 1900 1900 1900 190	Traffic Volume (vph) Future Volume (vph)	*	‡	₩		r	N/N	
lume (vph) 265 730 1295 15 10 420 lume (sph) 60 6 6 6 6 6 8 58 Factor 1.00 1.00 1.00 1.00 0.08 Factor 1.00 1.00 1.00 0.08 lume (sph) 6.0 6 6 6 6 6 6 6 8 58 Factor 1.00 1.00 1.00 1.00 0.08 lume (sph) 6.0 6 6 6 6 6 6 8 58 lume (sph) 1.00 1.00 1.00 0.08 last (ffm) 20 3610 3667 1805 2733 last (ffm) 20 3610 3667 1805 1808 last (ffm) 20 3610 3667 1805 1808 last (ffm) 20 3610 3667 1808 last (ffm) 20 3610 3667 1808 last (ffm) 30 3610 3667 1808 last (ffm) 30 3610 3667 1808 last (ffm) 30 3610 3697 1808 last (ffm) 31 31 31 32 31 31 31 31 31 31 31 31 31 31 31 31 31	Future Volume (vph)	265	730	1295	15	10	420	
time (s) (1900 1900	Ideal Flow (vohol)	265	730	1295	15	10	420	
Fractor (s) 6.0 6.6 6.6 5.8 5.8 Fractor (s) 6.0 6.6 6.6 5.8 5.8 Fractor (s) 6.0 6.6 6.6 5.8 5.8 Fractor (s) 6.0 6.95 1.00 0.88 1.00 1.00 1.00 1.00 1.00 1.00	room (whilpi)	1900	1900	1900	1900	1900	1900	
0.095 0.95 0.95 1.00 0.88 1.00 0.08 1.00 1.00 1.00 1.00	Total Lost time (s)	0.9	9.9	9.9		2.8	5.8	
lbikes 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Lane Util. Factor	1.00	0.95	0.95		1.00	0.88	
ted 1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,0	Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
ted (100 1.00 1.00 0.85 w (pord) 1.00 1.00 1.00 0.85 w (pord) 1.03 547 1805 2733 ted 0.12 1.00 1.00 0.95 1.00 w (pord) 2.06 3810 3867 1805 2733 tractor, PHF 0.96 0.96 0.96 0.96 0.96 duction (vph) 0 0 0 0 270 up Flow, (vph) 276 760 1349 16 0 0 270 up Flow, (vph) 5 76 1365 0 10 168 state (H/N) 5 6 6 6 6 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
red (1955 100 100 095 100 (1964) (1964) (1964) (1964) (1965) (1966) (1965) (1966) (196	Ŧ	1.00	1.00	1.00		1.00	0.85	
w (prot) 1703 3610 3667 1805 2733 ted 0.12 1.00 1.00 0.95 1.30 (wpm) 206 3810 3867 1805 2733 rector, PHF 0.96 0.96 0.96 0.96 0.96 0.96 (wpm) 276 760 1349 16 10 438 duction (wpl) 276 760 1365 0 0 270 biddes (%) 6% 0% 1% 0% 4% hiddes (%) 6% 0% 1% 4% Phases 5 6 4 4 Phases 5 6 6 6 6 6 Phases 5 6 6 4 4 4 Phases 5 6 6 6 6 6 6 6 Sector 6 6 6 6 6 6 6	Fit Protected	0.95	1.00	1.00		0.95	1.00	
ried (1) 10 100 109 100 (1) 10	Satd. Flow (prot)	1703	3610	3567		1805	2733	
w (perm) 206 3810 3867 1805 2733 reactor, PHF 0.96 0.96 0.96 0.96 0.96 0.96 duction (vph) 276 760 185 0 0 270 by Flow (vph) 276 760 185 0 10 168 st (4fm) 5 6% 0% 1% 0% 0% 4% p hicket (%) 6% 0% 1% 0% 0% 4% Phases 5 2 6 4 4 4 Phases 5 6 6 6 6 6 6 Green, G (s) 1134 1134 82.8 142 14.2 Green, G (s) 1134 1134 82.8 142 14.2 Green, G (s) 1134 1134 82.8 142 14.2 Green, G (s) 1134 1134 1134 82.8 5.8 5.8 5.8 5.	Flt Permitted	0.12	1.00	1.00		0.95	1.00	
(kHn) 276 760 1956 096 096 096 096 096 096 096 096 096 09	Satd. Flow (perm)	506	3610	3567		1805	2733	
(vph) 276 760 1349 16 438 duction (vph) 276 760 1365 0 0 270 st (#Int) 5 6 76 1365 0 10 488 sit (#Int) 6% 7% 1% 0% 4% 4 hicles (%) 6% 7% 7% 0% 4% hicles (%) 6% 7% 0% 4% hicles (%) 6% 7% 0% 4% Phasses 5 6 6 6 6 Green, g(s) 1134 1134 82.8 14.2 14.2 Green, g(s) 1134 113.4 82.8 14.2 14.2 Green, g(s)	Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	
duction (vph) 0 0 0 0 270 duction (vph) 276 760 1365 0 10 168 bildes (%) 6% 0% 1% 0% 0% 4% hides (%) 6% 0% 1% 0% 0% 4% bhases 5 2 6 4 bhases 2 4 4 2 14.2 Green (5) 113.4 113.4 82.8 14.2 14.2 Green (5) 113.4 113.4 82.8 14.2 14.2 Green (6) 113.4 113.4 82.8 14.2 14.2 Green (7) 13.4 113.4 82.8 14.2 14.2 Green (8) 13.4 113.4 82.8 14.2 14.2 Green (9) 13.5 5.0 5.0 3.0 3.0 Atension (8) 3.5 5.0 5.0 3.0 3.0 Cap (vph) 0.429 2824 2109 183 277 Port 0.0.1 0.2 1.3 0.0.1 Fort 0.0.4 1 0.2 1.3 0.0.1 Fort 0.0.5 0.61 Beally d2 3.4 3.2 18.9 56.8 60.2 Fort 0.0.5 0.61 Beally d2 3.4 20.5 57.0 64.0 Fort 0.0.0 1.00 1.00 1.00 Fort 0.0.0 1.00 1.00 Fort 0.0.0 1.00 1.00 Fort 0.0.0 1.00 1.00 Fort 0.0.0 1.00 Fort 0.00 Fort	Adj. Flow (vph)	276	760	1349	16	10	438	
thickes (%) 276 760 1365 0 10 168 5 st. #fm/n 5 6 6 0 0 10 168 5 5 5 6 0 10 168 5 5 5 6 0 10 168 5 5 5 6 0 10 168 5 5 5 6 0 0 0 10 168 5 5 5 6 0 0 0 0 10 10 10 10 10 10 10 10 10 10 1	RTOR Reduction (vph)	0	0	0	0	0	270	
hides (%) 6% 0% 1% 0% 0% 4% 1% 0% 1% 0% 0% 1% 0% 0% 0% 1% 0% 0% 1% 0% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 0% 1% 0% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 1% 0% 0% 1%	Lane Group Flow (vph)	276	760	1365	0	10	168	
hides (%) 6% 0% 1% 0% 4% 4% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6%	Confl. Peds. (#/hr)	2			2			
Phases 5 2 6 4 4 Phases 5 2 6 4 4 Phases 5 2 6 4 4 Phases 2 4 4 Green, G (s) 113.4 113.4 82.8 14.2 14.2 Green, G (s) 10.81 0.55 0.0.10 Green, G (s) 10.81 0.55 0.0.10 Green, G (s) 10.81 0.81 0.0.10 Prof. Cap (vph) 23.5 5.0 5.0 3.0 3.0 Green, G (s) 10.2 10.3 18.3 277 Prof. Cap (vph) 24.4 3.2 18.9 56.8 60.2 Freely, d 1 24.4 3.2 18.9 56.8 60.2 Freely, d 2 1.5 0.1 3.8 Freely, d 3.4 20.5 57.0 64.0 Freely, d 3.8	Heavy Vehides (%)	%9	%0	1%	%0	%0	4%	
Phases 5 2 6 4 Phases 6 4 Phases 2 6 Phases 2 6 Phases 6 4 Phases 6 6 Phases 6 6 6 6 Phase 1134 1134 828 142 142 Phase 1134 1134 828 142 Phase 1134 1134 828 138 Phase 1134 1134 828 138 Phase 1134 1134 1134 828 Phase 1134 1134	Turn Type	pm+pt	AA	AN		Prot	Perm	
Phases 2 Green, G(s) 1134 1134 82.8 142 142 Green, G(s) 0.81 0.89 0.10 0.10 Time (s) 60 66 66 5.8 5.8 5.8 Attension (s) 3.5 5.0 5.0 3.0 Attension (s) 3.5 5.0 5.0 3.0 Attension (s) 2.924 2109 183 277 Port co.11 0.38 0.01 Perm co.41 0.3 0.5 0.61 Perm co.41 0.3 0.5 0.65 Delay, d. 1.00 1.00 1.00 Isal Delay, d. 2. 1.5 0.1 3.8 Isal Control Delay O Control Corticulation 0.65 O Volument o Capacity ratio 0.65 Dr. Capacity Utilization 176% ICU Level of Service	Protected Phases	2	2	9		4		
Green, G (s) 113.4 113.4 82.8 14.2 14.2 Green, G (s) 113.4 113.4 113.4 82.8 14.2 14.2 Green, G (s) 113.4 113.6 10.6 6.6 6.6 6.6 6.8 6.8 6.8 6.0 1 10.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	Permitted Phases	2					4	
State 134 134 828 142 143 14	Actuated Green, G (s)	113.4	113.4	82.8		14.2	14.2	
g/C Ratio 0.81 0.81 0.59 0.10 0.10 s Time (s) 6.0 6.6 6.6 5.8 5.8 Cap (vph) 429 2924 2109 183 277 Cap (vph) 429 2924 2109 183 277 Prot c.0.11 0.21 0.38 0.01 Perm 0.64 1.2 0.86 0.05 0.05 Markey d1 24, 3.2 18.9 56.8 60.2 Markey d2 27.9 3.4 20.5 57.0 64.0 Service C A C E E Indicator 1.00 1.00 1.00 Markey C A C C E Service C A C E Markey C A C C C C C C C C C C C C C C C C C	Effective Green, g (s)	113.4	113.4	87.8		14.2	14.2	
Time (s) 6.0 6.6 6.6 5.8 5.8 4 4 4 4 5 4 4 4 5 4 4 4 4 4 4 4 5 4	Actuated g/C Ratio	0.81	0.81	0.59		0.10	0.10	
Atension (s) 3.5 5.0 5.0 3.0 3.0 Cap (vph) 429 2924 2109 183 277 Prof. c.0.11 0.21 0.38 0.01 277 Prof. c.0.11 0.21 0.38 0.01 0.00 Prof. c.0.41 0.2 0.65 0.65 0.61 Perm. c.0.44 3.2 0.65 0.05 0.61 Perm. 1.00 1.00 1.00 1.00 1.00 1.00 Rable Joleay, d. 2 3.4 0.2 1.5 0.1 3.8 2.0 A control Delay A control contro	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
Cap (vph) 429 2924 2109 183 277 Proft c0.11 0.21 0.38 0.01 Perm c0.41 0.21 0.38 0.01 Perm c0.44 0.26 0.65 0.05 0.61 Belay, d1 24.4 3.2 18.9 56.8 60.2 Nor Factor 1.00 1.00 1.00 1.00 1.00 service 27.9 3.4 20.5 57.0 64.0 64.0 service C A C E E E LOS A C E A C E A O Volunta Delay A C E A C A C B A C B A C B A C B A C B A C B A C B A C B A C B <t< td=""><td>Vehide Extension (s)</td><td>3.5</td><td>5.0</td><td>2.0</td><td></td><td>3.0</td><td>3.0</td><td></td></t<>	Vehide Extension (s)	3.5	5.0	2.0		3.0	3.0	
Prot c0.11 0.21 0.38 0.01 Perm 0.041 0.20 0.65 0.06 0.64 0.26 0.65 0.06 0.64 0.26 0.65 0.05 0.61 Delay, d1 24.4 3.2 18.9 56.8 60.2 Delay of 1.00 1.00 1.00 1.00 1.00 Ista Delay, d2 3.4 0.2 1.5 0.1 3.8 Every control Delay (s) 3.4 0.2 1.5 0.1 3.8 Every control Delay (s) 4 0.2 1.5 0.1 3.8 Every control Delay (s) 4 0.5 0.5 64.0 Every control Delay (s) 4 0.5 63.8 Every control Delay (s) 6.9 20.5 63.8 Every control Delay (s) 6.5 Every control Delay (s) 6.5 Every control Delay (s) 6.65 Every control Delay (s) 6.	Lane Grp Cap (vph)	429	2924	2109		183	277	
Perm c0.41 c0.65 c0.65 c0.06 0.64 0.26 0.65 0.65 0.61 A configuration 0.64 0.65 0.61 0.61 A configuration 1.00 1.00 1.00 1.00 Isal Delay, d2 3.4 0.2 1.5 0.1 3.8 Isal Delay, d2 3.4 0.2 1.5 0.1 3.8 Delay (s) A C E E E E Delay (s) A C E E E E LOS A C E E E E O Control Delay A C E E E O Volument ocapacity ratio 0.65 HCM 2000 Level of Service 140.0 Sum of lost time (s) 18 nn Capacity Utilization 7.4 6% ICU Level of Service 18 18	//s Ratio Prot	c0.11	0.21	0.38		0.01		
belay, d1 26 0.65 0.05 0.61 belay, d1 24,4 3.2 18.9 56.8 60.2 belay d2 3.4 0.2 1.5 0.1 3.8 belay d2 3.4 0.2 1.5 0.1 3.8 belay d2 3.4 20.5 57.0 64.0 bervice C A C E E LOS In Summary O Control Delay O Control Delay O Volume to Capacity ratio O Control Capacity ratio O Contr	//s Ratio Perm	c0.41					90:00	
belay, d1 24, 3.2, 18.9, 56.8, 60.2 on Factor 1.00 1.00 1.00 1.00 tal Delay, d2 1.5, 0.1, 3.8 tal Delay, d2 27.9, 3.4, 20.5, 57.0, 64.0 service C A C E E on Summary O Control Delay 23.5 HCM 2000 Level of Service O Volume to Capacity ratio	//c Ratio	0.64	0.26	0.65		0.05	0.61	
on Factor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Uniform Delay, d1	24.4	3.2	18.9		26.8	60.2	
Izal Delay, d2 3.4 0.2 1.5 0.1 3.8 Fervice 27.9 3.4 20.5 57.0 64.0 Delay (s) A C E E E Delay (s) A C E E E LOS A C E E E I LOS A C E E E I Control Delay A C E E E O Voluntena to Capacity ratio 0.65 HCM 2000 Level of Service 140.0 Sum of lost time (s) 18 A Capacity Utilization 74.6% ICU Level of Service ICU Level of Service ICU Level of Service	Progression Factor	1.00	1.00	1.00		1.00	1.00	
27.9 3.4 20.5 57.0 64.0	Incremental Delay, d2	3.4	0.2	1.5		0.1	3.8	
betwice C A C E E Delay(s) 9.9 20.5 63.8 E LOS A C E E an Summary Control Delay 23.5 HCM 2000 Level of Service Ovolume to Capacity ratio 0.65 HCM 2000 Level of Service Ovole Length (s) 140.0 Sum of lost time (s) 18 nn Capacity Utilization 74.6% ICU Level of Service 18	Delay (s)	27.9	3.4	20.5		57.0	64.0	
9.9 20.5 63.8 A C E E 23.5 HCM 2000 Level of Service 0.65 Sum of lost time (s) 74.6% ICU Level of Service	Level of Service	ပ	∢	O		ш	ш	
A C E 23.5 HCM 2000 Level of Service 0.65 Sum of lost time (s) 74.6% ICU Level of Service	Approach Delay (s)		6.6	20.5		63.8		
23.5 HCM 2000 Level of Service 0.65 Sum of lost time (s) 74.6% ICU Level of Service	Approach LOS		∢	ပ		ш		
23.5 HCM 2000 Level of Service 0.65 Sum of lost time (s) 74.6% ICU Level of Service	Intersection Summary							
0.65 140.0 Sum of lost time (s) 74.6% ICU Level of Service	HCM 2000 Control Delay			23.5	ĮΞ	:M 2000	evel of Service	O
140.0 Sum of lost time (s) 74.6% ICU Level of Service	HCM 2000 Volume to Capac	ity ratio		0.65				
Utilization 74.6% ICU Level of Service	Actuated Cycle Length (s)			140.0	Su	m of lost	time (s)	18.4
	Intersection Capacity Utilizat	ion		74.6%	0	J Level o	f Service	Q
	Analysis Period (min)			15				

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HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

## Comparison of the compariso		• =	† =	<u></u> ₩	₩ MB	↓ MBI	₩ WBR	√ ₩	← NBI	₹	≯ ₩	→ SBT	SB A
10 0 10 10 0 30 5 515 10 20 640 Stop 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95		1	4	i		4	i		₽			4	
10 0 10 10 0 30 5 515 10 20 640		9	0	10	10	0	30	2	515	10	20	040	25
Stop		9	0	10	10	0	30	2	515	10	20	640	25
0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96			Stop			Stop			Free			Free	
11.0 1.1 1.1 0 32 5 542 11 21 674 2		L	%0	C	C	%0			%0		L	%0	
20 30 30 30 30 30 30 30 30 30 30 30 30 30		11	CS:0	0.93	0.93	0.90	33	0.35 7	542	11	0.95	67.4	26.0
3.6 3.6 3.6 3.6 3.6 1.1 1.1 1.1 1.2 5.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1			20	=	=	30.0	4	0	4	=	1	5	3
1.1 1.1 1.1 2.6 1.2 1.2 1.3 None None None None None None None None			3.6			3.6						3.6	
None			[1.						[:	
None None 134 1342 707 1328 1350 582 720 35 45 33 35 40 33 24 83 128 138 62 136 507 747 36 45 33 35 40 33 24 89 181 129 466 1110 1138 522 483 27 1 65 62 43 28 120 43 558 721 11 22 43 558 721 11 25 21 11 26 20 06 25 8 38 02 06 26 192 02 06 27 A A A A A A A A A A A A A A A A A A A			2			က						0	
None 134 1342 707 1328 1350 582 720 583 1130 1129 466 1110 1138 522 483 523 7.1 7.0 6.2 7.1 6.5 6.2 4.3 4.1 3.5 4.5 3.3 3.5 4.0 3.3 2.4 2.2 2.1 4.4 52 135 150 507 747 939 1.1 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C A A A 2.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5 6.192 0.2 0.6 D C B A A 3.5													
0.80 0.80 0.77 0.80 0.89 0.94 0.77 238 0.94 1342 707 1328 1350 562 720 563 563 7.1 6.5 6.2 4.3 4.1 4.1 130 1129 466 1110 1138 522 483 524 5.3 3 3.5 4.0 3.3 2.4 99 98 120 98 120 100 94 99 99 98 120 120 98 92 100 94 99 99 98 120 120 98 120 120 94 99 99 99 120 120 120 120 120 120 120 120 120 120									None			None	
134 134 134 136 0.80 0.94 0.77 238 0.94 1344 1342 707 1328 1350 582 720 583 135 145 246 1410 1438 522 483 523 147 170 6.2 7.1 6.5 6.2 4.3 4.1 15 124 452 135 140 94 99 98 15 124 452 135 150 507 747 939 14 14 15 21 17 28 17 28 18 15 14 0.01 0.02 0.6 192 0.2 0.6 16 19 0.0 0.0 0.0 17 14 0.01 0.02 0.0 18 18 18 18 18 18 18													
0.80 0.80 0.77 0.80 0.80 0.94 0.77 (1324 1342 707 1328 1350 582 720 (1329 1350 14.2 720 1328 1350 14.2 720 (1329 1350 14.2 720 1328 1350 14.3 72.4 488 (132 13.2 13.2 13.2 13.2 13.2 13.2 13.2 1									238			127	
134 1342 707 1328 1350 582 720 1130 1129 466 1110 1138 522 483 7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 31 100 98 92 100 94 99 126 124 452 135 150 507 747 11 11 5 11 26 111 32 11 26 111 0.14 0.01 0.02 28 3.8 0.2 0.5 26 19.2 0.6 D C A A A S95% NCU Level of Service B		0.80	0.80	0.77	0.80	0.80	0.94	0.77			0.94		
1129 1129 466 1110 1138 552 483 7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 3.1 100 98 92 100 94 99 1126 124 4.52 135 150 507 747 22 4.3 558 721 11 21 5 21 11 21 5 21 11 29 0.2 0.6 2.8 3.8 0.2 0.5 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 2.6 19.2 0.2 0.6 2.5 1.4 55.5% ICU Level of Service B		1344	1342	707	1328	1350	582	720			583		
1130 1129 466 1110 1138 522 483 3.5 4.5 3.3 3.5 4.0 3.3 2.4 3.1 126 124 452 150 94 99 126 124 452 151 6.5 6.2 4.3 128 124 452 150 94 99 129 170 98 92 100 94 99 120 43 568 721 11 11 22 11 26 197 297 747 989 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 2.5 19.2 0.2 0.6 2.5 19.2 0.2 0.6 2.5 19.2 0.2 0.6 2.5 19.2 0.5 74 25.5 19.2 0.5 74 25.6 19.2 0.6 25.6 19.2 0.6 25.7 1 0.14 0.01 0.02 25.8 3.8 0.2 0.6 25.8 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6 25.9 3.8 0.2 0.6													
1130 1129 466 1110 1138 522 483 7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 91 100 88 92 100 94 99 110 88 92 100 94 99 111 11 5 21 11 11 5 21 11 32 11 26 11 32 11 26 11 0.14 0.01 0.02 28 38 0.2 0.5 26 19.2 0.2 0.6 D C A A A 159 C C C C C C C C C C C C C C C C C C C													
7.1 7.0 6.2 7.1 6.5 6.2 4.3 3.5 4.5 3.3 3.5 4.0 3.3 2.4 3.1 100 98 92 100 94 99 126 124 4.52 135 150 507 747 12 43 5.88 721 11 32 11 26 111 52 77 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.5 19.2 0.2 0.6 D C A A A 3.5 6.7 1 2.8 3.8 0.2 0.5 2.5 19.2 0.2 0.6 D C A A A A A A A A A A A A A A A A A A	•	1130	1129	466	1110	1138	522	483			523		
3.5 4.5 3.3 3.5 4.0 3.3 2.4 91 100 98 92 100 94 99 126 124 4.52 135 150 507 747 22 43 558 721 11 32 11 5 21 11 32 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 192 0.2 0.6 D C A A A S5.5% ICU Level of Service B		7.1	2.0	6.2	7.1	6.5	6.2	4.3			4.1		
35 4.5 3.5 4.0 3.3 2.4 126 124 452 135 150 94 99 12 43 558 721 11 11 5 21 11 29 0.2 0.5 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 0.1 0.4 0.01 0.02 2.6 3.8 0.2 0.5 2.6 19.2 0.2 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.7 4.7 0.6 0.8 4.8 0.2 0.6 0.9 5.5 0.6 0.9 6.7 0.6 0.9 0.6 0.		L		0	ı		d				d		
91 100 98 92 100 94 99 126 126 124 452 135 150 507 747 99 126 127 147 939 11 1 1 5 21 11 26 137 147 939 11 1 26 132 0.1 0.14 0.14 0.0 0.5 256 19.2 0.2 0.6 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5		3.5	4.5		3.5	4.0		5.4			7.7		
126 124 452 135 150 507 747 EB 1 WB1 NB1 SB1 22 43 558 721 11 32 11 5 21 13 27 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 D C A A A 2.56 192 0.2 0.6 D C A A A 2.56 192 0.2 0.6 D C A A A 2.56 192 0.2 0.6 1.4		91	100	86	92	100	8	ගි			86		
EB1 WB1 NB1 SB1 22 43 558 721 11 11 5 21 11 32 11 26 197 297 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 5.5 6 192 0.2 0.6 D C A A 25.6 192 0.2 0.6		126	124	452	135	120	202	747			939		
22 43 558 721 11 11 5 21 11 26 21 197 297 747 939 0.11 0.14 0.01 0.02 2.8 38 0.2 0.5 2.6 192 0.2 0.6 D C A A 256 192 0.2 0.6 D C A A 59.5% (CU Level of Service	_	EB 1	WB1	NB 1	SB 1								
11 11 5 21 11 28 11 26 197 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 D C A A 2.56 19.2 0.2 0.6 D C A A 1.4 CU Level of Service		22	43	558	721								
11 32 11 26 197 297 747 939 0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C 14 59.5% ICU Level of Service		=	=	2	77								
197 297 747 939 0.11 0.14 0.01 0.02 2.8 39 0.2 0.5 2.5 19.2 0.2 0.6 D C A A A 2.5 19.2 0.2 0.6 D C 1.4 CU Level of Service 15		=	32	11	56								
0.11 0.14 0.01 0.02 2.8 3.8 0.2 0.5 2.6 19.2 0.2 0.6 2.5 19.2 0.2 0.6 D C A A 2.5 19.2 0.2 0.6 1.4 CU Level of Service		197	297	747	939								
28 38 02 05 256 192 02 06 256 192 0.2 0.6 D C A A 14 CU Level of Service		0.11	0.14	0.01	0.02								
256 192 0.2 0.6 D C A A 256 192 0.2 0.6 D C 1.4 59.5% IOU Level of Service		2.8	3.8	0.2	0.5								
D C A A 256 192 0.2 0.6 D C 1.4 59.5% CU Level of Service 15		25.6	19.2	0.2	9.0								
25.6 19.2 0.6 D C 1.4 CU Level of Service 15.5% CU Level of Service		_	O	∢	∢								
D C 14 59.5% (CU Level of Service 15		25.6	19.2	0.2	9.0								
1.4 59.5% ICU Level of Service 15			O										
1.4 59.5% ICU Level of Service 15													
59.5% ICU Level of Service 15				1.4									
15	ization			29.5%	⊴	J Level o	f Service			ш			
				15									

Synchro 11 Report Page 17 Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road	ntersed wood F	ction Ca Road	apacity	, Analy	sis		Future Total PM (Phase 1) Upper Kerr Village (8124-01)
	1	>	•	←	→	*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	>			4	£		
Traffic Volume (veh/h)	15	10	2	510	009	40	
Future Volume (Veh/h)	15	10	2	510	009	40	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	16	7	2	537	632	42	
Pedestrians	32						
Lane Width (m)	3.6						
Walking Speed (m/s)	- -						
Percent Blockage	က						
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	0.86	0.81	0.81				
vC, conflicting volume	1235	889	209				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	939	496	522				
tC, single (s)	6.4	6.3	4.3				
tC, 2 stage (s)							
IF(s)	3.5	3.4	2.4				
p0 queue free %	ස	97	66				

																	¥	
																	ICU Level of Service	
	2.4	66	751	SB 1	674	0	42	1700	0.40	0.0	0.0		0.0			0.5	44.2%	15
	3.4	97	437	NB 1	542	2	0	751	0.01	0.2	0.2	∢	0.2					
	3.5	93	243	EB 1	27	16	=======================================	297	0.09	2.3	18.3	O	18.3	O			ization	
(s) signe (s)	tF(s)	% eauf enenb 0d	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Without Kerr St Improvements BA Group - EFS

Timings
Future Total PM (Phase 1)
9: Kerr Street & Stewart Street

→	SBT	4	490	490	Α	9		9		24.0	32.0	45.0	%0.09	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	35						
۶	SBL		22	22	pm+pt	~	9	~		0.9	10.0	10.0	13.3%	7.0	3.0	0.0			Lead	Yes	3.0	3.0	0.0	0.0	None									
←	NBT	4	390	390	Ϋ́	2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		9	10	Perm		2	2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				of Green		
Ļ	WBT	4	15	15	Ϋ́	∞		∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				rL, Start o		
>	WBL		10	10	Perm		∞	∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				and 6:SB		
†	EBT	4	9	10	Ϋ́	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				2:NBTL		
1	EBL		20	20	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0:0	0.0	None	10.0	13.0	20				d to phase		rdinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control I ype: Actuated-Coordinated

Without Kerr St Improvements

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Queues
9: Kerr Street & Stewart Street

→	SBT	647	0.54	10.7				98.2	79.0		1192	-	-	-	0.54	
-	NBT	451	0.35	7.9		7.9	18.6	55.3	141.0		1297	0	0	0	0.35	
ţ	WBT	109	0.29	10.0	0.0	10.0	3.4	13.0	36.6		552	0	0	0	0.20	
†	EBT	81	0.29	21.6	0.0	21.6	8.5	16.5	71.6		4	0	0	0	0.18	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

Future Total PM (Phase 1)

Movement EB1 EB1 MB1	## Color		4	1	~	>	ļ	4	•	←	•	۶	→	•
50 40 10 40	\$60 100 15 10 145 75 10 340 50 100 1900 1900 1900 1900 1900 1900 1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50 10 15 10 15 75 10 390 15 55 490 1900	50 10 15 10 15 75 10 390 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 100 1,00 0.99 1.00 1.00 1.00 0,97 0.96 1.00 1.00 0,97 0.92 1.00 1.00 0,97 0.99 1.00 1.00 0,97 0.92 0.92 0.92 1.00 0,97 0.99 1.00 1.00 1.00 0,97 0.92 0.92 0.92 0.92 1.85 0,77 132 1.562 0.92 0.92 1.85 0 13 0 0 4.0 0 1.00 0 13 0 0 4.0 0 1.00 0 13 0 0 4.0 0 4.0 0 13 <t< td=""><td>Lane Configurations</td><td></td><td>4</td><td></td><td></td><td>4</td><td></td><td></td><td>4</td><td></td><td></td><td>4</td><td></td></t<>	Lane Configurations		4			4			4			4	
50 10 15 10 15 75 10 390 15 55 490 1900	100 15 10 15 75 10 390 100 1900 1900 1900 1900 1900 1900 100 100 1000 1900 1900 1900 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	Traffic Volume (vph)	20	9	15	10	15	22	10	390	15	22	490	20
1900 1900	1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	20	9	5	9	15	75	9	330	15	22	490	20
100 100	100 100 100 100 100 100 100 100 100 100	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00	1,000 1,000	l otal Lost time (s)		9.6			5.4			4.0			5.6	
10.00 10.0	0.99 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.97 0.99 0.99 0.99 1.00 0.97 0.99 0.92 0.99 0.99 0.99 0.97 0.99 0.92 0.92 0.92 0.92 0.92 0.98 0.92 0.92 0.92 0.92 0.92 0.92 0.98 0.90 0.91 0.94 0.09 0.09 0.09 0.09 0.09 0.18 0.09 0.09 0.09 0.18 0.09 0.09 0.09 0.18 0.09 0.09 0.09 0.18 0.09 0.09 0.09 0.18 0.09 0.09 0.09 0.18 0.09 0.09 0.09 0.19 0.09 0.09 0.10 0.09 0.09 0.10 0.09 0.09 0.10 0.09 0.09 0.10 0.09 0.10 0.09 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0.10 0.09 0	Lane Util. Factor		0.00			0.1			1.00			1.00	
0.89 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Frpb, ped/bikes		0.99			0.36			1.00			0.99	
0.97 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0	0.97 0.90 1.00 1651 1562 1665 170 1651 1562 1855 0.77 1562 1855 0.77 1562 1855 0.77 1562 1855 0.77 1562 1855 0.78 0.92 0.92 0.92 0.92 0.92 1855 0.13 0 0.8 0.9 0.92 0.92 0.92 0.92 0.92 0 13 0 0.8 0 0 45 0 0 45 0 0 0 0 0 41 0 0 45 0 0 0 0 0 45 0 0 45 0 0 0 0 0 45 0 0 45 0 0 0 0 0 45 0 0 45 0 0 0 0 0 45 0 0 45 0 0 0 0 0 45 0 0 45 0 0 0 0 0 0 45 0 0 45 0 0 0 0 0 0 45 0 0 45 0 0 0 0 0 0 0 45 0 0 45 0 0 0 0 0 0 0 45 0 0 45 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 0 45 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Flpb, ped/bikes		0.98			1:00			1.00			1.00	
0.87 0.89 1.00 1.00 1.00 0.87 0.89 1.00 1.00 0.77 0.97 0.99 1.00 0.77 0.97 0.99 1.00 0.82 0.92 0.92 0.92 0.92 0.92 0.93 0.84 0.94 0.96 0.96 0.94 1.424 16 60 5.33 0.85 0.96 0.96 0.96 0.96 1.00 0.94 0.85 0.96 0.96 0.96 0.96 1.00 0.94 0.85 0.96 0.96 0.96 0.96 0.96 0.96 0.85 0.96 0.96 0.96 0.96 0.96 0.96 0.98 0.98 0.98 0.98 0.96 0.96 0.99 0.99 0.99 0.99 0.99 0.96 0.99 0.99 0.90 0.96 0.96 0.96 0.90 0.90 0.90 0.96 0.96 0.96 0.90 0.90 0.90 0.96 0.96 0.96 0.90 0.90 0.90 0.90 0.96 0.96 0.90 0.90 0.90 0.90 0.96 0.96 0.90 0.90 0.90 0.90 0.96 0.96 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0.90 0	100 100	FT		0.97			0.30			1.00			0.99	
1567 1562 1855 1801 1661 1562 1865 1855 1801 1323 1518 1829 1678 1678 1320 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 1321 16 11 16 82 11 424 16 60 533 132 15 15 20 36 25 25 0.92 0.92 132 15 15 20 36 25 25 25 132 20% 0.% 13% 2.% 0.% 14% 17% 1.% 2.% 0. 0 132 132 132 210 2.9 0.06 132 132 132 210 0.06 0.06 132 132 2.67 1243 1141 132 132 2.67 1243 1141 133 134 2.65 2.6 2.6 0.06 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 1.00 100 1.00 0.53 0.06 0.06 100 1.00 1.00 1.00 1.00 100 1.00 1.00 1.00 100 1.00 1.00 1.00 100 0.53 1.38 1.38 110 1.30 1.30 1.38 110 1.30 1.30 1.30 110 1.30 1.30 1.30 110 1.30 1.30 1.30 110 1.30 1.30 1.30 110 1.30 1.30 1.30 110 1.30	1661 1562 1855 1855 1855 1855 1957 1958 1958 1958 1958 1958 1958 1958 1958	Fit Protected		0.97			0.39			1.00			1.00	
10,77 10,97 10,98 10,9	1322 1629 1629 1629 1629 1629 1629 1629 16	Satd. Flow (prot)		1661			1562			1855			1801	
1323 1518 1829 1829 1829 1829 1878 1878 1878 1878 1878 1878 1878 187	1323 1518 1829 192 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.	FIt Permitted		0.77			0.97			0.98			0.93	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)		1323			1518			1829			1678	
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20 68 0 0 41 0 0 450 0 644 20 36 15 15 15 15 20 35 20 0 0 0 1 2 0 0 0 1 2 0 0 0 1 2 0 0 0 1 2 0 0 0 1 2 0 0 0 0 1 2 0 0 0 0 0 0 3 0 0 0 0 0 3 0 0 0 0 0	20 68 0 0 41 0 0 450 2 20 006 00 4 0 0 450 2 20 00 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0	RTOR Reduction (vph)	0	13	0	0	89	0	0	~	0	0	က	0
20 15 15 15 20 35 25 25 26 25 26 25 26 25 26 25 26 25 26 25 26 25 26 25 26 27 26 51 26 51 26 51 26 51 26 51 26 51 26 51 26 51 26 51 26 51 26 51 26 51 60<	2% 20% 15 15 20 35 1% 2% 20% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 0% 1 % 1% 2% 2% 2 % 1% 2% 2 % 1% 2% 2 % 2	Lane Group Flow (vph)	0	89	0	0	4	0	0	420	0	0	644	0
2% 20% 0% 13% 2% 0% 1% 1% 2% 0 2 0 0 0 0 0 3 1 4 4 8 2 0 0 0 0 3 4 4 8 3 2 6 1 <t< td=""><td>2% 20% 0% 13% 2% 0% 1% 0 2 0</td><td>Confl. Peds. (#/hr)</td><td>20</td><td></td><td>15</td><td>15</td><td></td><td>20</td><td>32</td><td></td><td>25</td><td>25</td><td></td><td>35</td></t<>	2% 20% 0% 13% 2% 0% 1% 0 2 0	Confl. Peds. (#/hr)	20		15	15		20	32		25	25		35
0 2 0	NA Perm NA Perm NA	Heavy Vehicles (%)	2%	20%	%0	%0	13%	5%	%0	1%	17%	1%	5%	%0
Perm NA Perm NA Perm Perm NA pm+pt 4 8 2 11 6 6 11 6 6 11 6 6 6 11 6 8 6 6 8 7 4 0 6 8 6 6 8 6 <td>Perm NA Perm NA Perm NA 4 4 8 2 2 4 13.2 13.2 51.0 13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 4.0 4.0 4.0 232 267 1243 5.05 0.03 0.25 0.29 0.16 0.36 26.8 26.2 5.1 1.00 1.00 1.00 1.00 0.4 0.8 27.8 26.5 5.9 C C A 27.8 26.5 5.9 C C A 27.8 26.5 5.9 C C A A 27.8 26.5 5.9 C C A A</td> <td>Bus Blockages (#/hr)</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> <td>2</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>က</td> <td>0</td>	Perm NA Perm NA Perm NA 4 4 8 2 2 4 13.2 13.2 51.0 13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 4.0 4.0 4.0 232 267 1243 5.05 0.03 0.25 0.29 0.16 0.36 26.8 26.2 5.1 1.00 1.00 1.00 1.00 0.4 0.8 27.8 26.5 5.9 C C A 27.8 26.5 5.9 C C A 27.8 26.5 5.9 C C A A 27.8 26.5 5.9 C C A A	Bus Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	က	0
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4 8 2 6 132 132 51.0 6 132 132 51.0 6 0.18 0.18 51.0 6 0.18 0.18 0.68 6 5.4 4.0 4.0 6 4.0 4.0 4.0 6 232 267 1243 6 6.05 0.03 0.25 6 26.8 26.2 5.1 10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0 0.4 0.8 5.9 C C C A C C C A C C C A C C A A A C C A C C A A C C C A C C </td <td>4 13.2 2 51.0 13.2 13.2 51.0 13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 5.4 4.0 4.0 6.8 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 26.5 5.9 2.4 0.36 2.8 26.5 5.9 2.8 26.5 6.9 2.9 26.5 6.9 2.0 26.5 6.9 2.</td> <td>Protected Phases</td> <td></td> <td>4</td> <td></td> <td></td> <td>∞</td> <td></td> <td></td> <td>2</td> <td></td> <td>-</td> <td>9</td> <td></td>	4 13.2 2 51.0 13.2 13.2 51.0 13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 5.4 4.0 4.0 6.8 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 267 1243 2.32 26.5 5.9 2.4 0.36 2.8 26.5 5.9 2.8 26.5 6.9 2.9 26.5 6.9 2.0 26.5 6.9 2.	Protected Phases		4			∞			2		-	9	
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13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 4.0 4.0 4.0 2.32 2.67 1243 2.0.5 0.03 0.25 0.29 0.16 0.36 2.0.8 2.6.2 5.1 1.00 1.00 1.00 1.0 0.4 0.8 2.7.8 2.6.5 5.9 C C C A A ecity ratio 0.53 cation 80.3% ICUI Level of Service D	13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 5.4 4.0 4.0 4.0 4.0 23.2 267 1243 20.29 0.16 0.36 26.8 26.2 5.1 1.00 1.00 1.00 1.00 0.49 0.8 27.8 26.5 5.9 C C C A A 9.5 HCM 2000 Level of Service 15.0 Sum of lost time (s) ration 80.3% ICU Level of Service 15.0 Sum of lost time (s) ration 80.3% ICU Level of Service	Actuated Green, G (s)		13.2			13.2			51.0			51.0	
6.18 0.18 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.6	0.18 0.18 0.08 5.4 5.4 5.4 6.68 4.0 4.0 4.0 4.0 232 267 1243 2.005 0.03 0.25 0.29 0.16 0.36 26.8 26.8 26.2 5.1 1.00 1.00 1.00 1.0 0.4 0.8 27.8 26.5 5.9 C C C A A 27.8 26.5 5.9 C C C A A 27.8 26.5 5.9 C C A A 3.00 200 100 time (s) station 80.3% (CU Level of Service 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Effective Green, g (s)		13.2			13.2			51.0			51.0	
5.4 5.4 5.4 5.4 5.4 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4	5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4	Actuated g/C Ratio		0.18			0.18			0.68			0.68	
4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0	Clearance Time (s)		5.4			5.4			5.4			5.4	
232 267 1243 c0.05 0.03 0.25 0.29 0.16 0.36 26.8 26.2 5.1 1.00 1.00 1.00 1.0 0.4 0.8 27.8 26.5 5.9 C C A A 27.8 26.5 5.9 C C A A acty ratio 0.53 tation 80.3% ICU Level of Service D	232 267 1243 c0.05 0.03 0.03 c0.29 0.16 0.36 26.8 26.2 5.1 1.00 1.00 1.00 1.00 0.44 0.8 27.8 26.5 5.9 C C C A A socity ratio 0.53 Sum of lost time (s) ration 80.3% ICU Level of Service 15.0 Sum of lost time (s) ration 80.3% ICU Level of Service 15.0 Sum of lost time (s)	Vehicle Extension (s)		4.0			4.0			4.0			4.0	
c0.05 0.03 0.25 0.25 0.29 0.16 0.36 0.25 0.26 0.36 0.36 0.36 0.36 0.36 0.36 0.36 0.3	C0.05 0.03 0.25 0.29 0.16 0.36 26.8 26.2 0.16 0.36 27.8 26.5 0.4 0.8 27.8 26.5 5.9 27.8 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 27.8 26.5 5.9 27.8 26	Lane Grp Cap (vph)		232			267			1243			1141	
2005 0.03 0.25 0.05 0.25 0.05 0.25 0.05 0.25 0.05 0.0	COORS COORS COORS COORS	v/s Ratio Prot												
268 262 5.1 268 262 5.1 100 100 100 1.0 100 0.8 27.8 26.5 5.9 28.9 26.9 26.9 26.9 26.9 26.9 26.9 26.9 26	0.29 0.16 0.36 20.8 26.2 5.1 1.00 1.00 1.00 1.0 0.4 0.8 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 C C A 27.8 C C A 27.8 C C A 4 27.8 C C A 4 27.9 C C A 4 27.0 Sum of lost time (s) 25.0 Sum of lost time (s)	v/s Ratio Perm		c0.05			0.03			0.25			c0.38	
26.8 26.2 5.1 1.00 1.00 1.00 1.00 1.00 0.4 0.8 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 26.5 5.9 27.8 26.5 26.5 26.5 26.5 26.5 26.5 26.5 26.5	26.8 26.2 5.1 1.00 1.00 1.00 1.00 1.00 0.4 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.8 26.5 5.9 27.9 26.5 5.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 27.9 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 26.5 5.9 27.9 26.5 26.5 26.5 26.5 26.5 26.5 26.5 26.5	v/c Ratio		0.29			0.16			0.36			0.56	
1.00 1.00 1.00 1.00 1.00 1.00 1.0 0.4 0.8 27.8 26.5 5.9 C C A A C C C A A secity ratio 0.53 HCM 2000 Level of Service A 13.8 cation 80.3% ICU Level of Service D	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1		26.8			26.2			5.1			6.2	
1.0 0.4 0.8 27.8 26.5 5.9 C C A A 27.8 26.5 6.9 C A A 27.8 26.5 6.9 A C C A A Bacity ratio 0.53 C C A A Bacity ratio 0.53 C C C A A Bacity ratio 0.53 C C D A Bacity C C D Bacity C	1.0 0.4 0.8 27.8 26.5 5.9 C C C C 2.65 5.9 C 2.65 5.9 A C C 2.65 5.9 A C C 2.65 5.9 C C C C C C C C C C C C C C C C C C C	Progression Factor		1.00			1.00			1.00			1.00	
27.8 26.5 5.9 C C A 27.8 26.5 5.9 C C A A acity ratio 0.53 Eation 80.3% (CU Level of Service D	27.8 26.5 5.9 C C C A C C A C C A A A 27.8 26.5 5.9 C C A A 9.5 HCM 2000 Level of Service acity ratio 0.53 Sum of lost time (s) takin 80.3% ICU Level of Service 15.0 Sum of lost time (s) takin 80.3% ICU Level of Service 15.1 Service	Incremental Delay, d2		1.0			0.4			0.8			9.0	
C C A 27.8 26.5 5.9 C C A ecity ratio 0.53 HCM 2000 Level of Service A 15. Icul Level of Service D 15. Icul Level of Service D 15. Icul Level of Service D	C C C A 27.8 26.5 5.9 C C A A 9.5 HCM 2000 Level of Service 9.5 Num of lost time (s) ration 80.3% ICU Level of Service 15.0 Sum of lost time (s) 15.0 Sum of lost time (s) 15.1 Service 15.1 Service	Delay (s)		27.8			26.5			5.9			6.9	
27.8 28.5 5.9 C C A A script ratio 0.53 HCM 2000 Level of Service A 75.0 Sum of lost time (s) 13.8 ration 80.3% ICU Level of Service D	27.8 26.5 5.9 C C A C C A A 2000 Level of Service acity ratio 75.0 Sun of lost time (s) ration 80.3% ICU Level of Service 15	Level of Service		ပ			O			⋖			∢	
C C A 9.5 HCM 2000 Level of Service A recity ratio 0.53 Sum of lost time (s) 13.8 ration 80.3% ICU Level of Service D	C C A 9.5 HCM 2000 Level of Service acity ratio 0.53 Sum of lost time (s) ration 80.3% ICU Level of Service 15	Approach Delay (s)		27.8			26.5			5.9			6.9	
9.5 HCM 2000 Level of Service 0.53 Cum of lost time (s) 75.0 Sum of lost time (s) 75.0 Sum of 10st time (s) 75.0 Sum of 10	9.5 HCM 2000 Level of Service 0.53 Cum of lost time (s) 75.0 Sum of lost time (s) 1.50 CU Level of Service 1.50 Service 1.	Approach LOS		ပ			O			⋖			∢	
9.5 HCM 2000 Level of Service 0.53 Sum of lost time (s) zation 80.3% ICU Level of Service 15	9.5 HCM 2000 Level of Service 0.53 Sun of lost time (s) 75.0 Sun of lost time (s) ration 80.3% ICU Level of Service 15	Intersection Summary												
secity ratio 0.53 Sum of lost time (s) 75.0 Sum of lost time (s) 24tion 80.3% ICU Level of Service 15	socity ratio 0.53 Sum of lost time (s) ration 80.3% ICU Level of Service 15	HCM 2000 Control Delay			9.5	Ĭ	CM 2000	Level of S	Service		⋖			
75.0 Sum of lost time (s) ration 80.3% ICU Level of Service 15	75.0 Sum of lost time (s) cation 80.3% ICU Level of Service 15	HCM 2000 Volume to Capacit	ty ratio		0.53									
Utilization 80.3% ICU Level of Service 15	Utilization 80.3%	Actuated Cyde Length (s)			75.0	જ	ım of lost	time (s)			13.8			
		Intersection Capacity Utilization	nc		80.3%	೦	U Level o	f Service			_			
		Analysis Period (min)			15									

Without Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 21

Timings 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

The Configurations Fig. Fig. WBT WBR NBL NBL SBT MBL MBT SBT The Configurations SBS SBT SBT SBT The Configurations SBS SBT SBT SBT SBT SBT The Configurations SBT		1	†	-	Ļ	1	•	—	۶	→	
1	Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
1) 385 220 60 90 485 95 1310 120 130 385 220 60 90 485 95 1310 120 130 385 220 60 90 485 95 1310 120 130 470 48 8 8 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 5 2 1 1 1 1	Lane Configurations	K	₽	*	*	*	r	4413	F	4413	
1) 385 220 60 90 485 95 1310 120 170 170 170 170 170 170 170 170 170 17	Traffic Volume (vph)	382	220	09	06	485	95	1310	120	1135	
Prof. NA pm+pt NA pm+pt NA Prof. 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 7 4 3 8 1 5 2 1 7 10.	Future Volume (vph)	382	220	09	90	485	92	1310	120	1135	
7 4 3 8 1 5 2 1 7 4 3 8 1 5 2 1 7 7 4 3 8 1 5 2 1 7 7 4 3 8 1 5 2 1 7 7 4 7 8 8 8 2 2 1 7 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Turn Type	Prot	Ν	pm+pt	Ϋ́	vo+mq	pm+pt	₹	Prot	¥	
7 4 3 8 8 2 1 7 0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Protected Phases	7	4	က	∞	-	2	2	Ψ-	9	
7 4 3 8 1 5 2 1 7 1 10. 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Permitted Phases			∞		∞	2				
7.0 10.0 7.0 10.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Detector Phase	7	4	က	∞	-	2	2	Ψ-	9	
120 250 120 250 120 120 120 120 120 120 120 120 120 12	Switch Phase										
12.0 25.0 12.0 25.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12	Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	
210 40.0 21.0 40.0 17.0 17.0 42.0 17.0 17.0 42.0 17.0 17.5% 33.3% 17.5% 33.3% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 14.2% 35.0% 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0	Minimum Split (s)	12.0	25.0	12.0	25.0	12.0	12.0	41.0	12.0	41.0	
175% 333% 175% 333% 142% 142% 350% 142% 350% 142% 350% 142% 350% 16.0 33.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17	Total Split (s)	21.0	40.0	21.0	40.0	17.0	17.0	42.0	17.0	45.0	
160 330 160 330 120 120 350 120 350 120 350	Total Split (%)	17.5%	33.3%	17.5%	33.3%	14.2%	14.2%	35.0%	14.2%	35.0%	
3.0 4.0 3.0 4.0 3.0 3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Maximum Green (s)	16.0	33.0	16.0	33.0	12.0	12.0	35.0	12.0	35.0	
2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	
Signature Sign	All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	2.0	3.0	2.0	3.0	
Solution	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Lead	Total Lost Time (s)	2.0	7.0	2.0	7.0	5.0	5.0	7.0	5.0	7.0	
(s) Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	
(s) 50 50 50 50 50 50 50 50 50 50 50 50 50	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
30 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
se (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
9) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
None None None None None C-Min None 7.0 7.	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
11.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	
11.0	Walk Time (s)		7.0		7.0			7.0		7.0	
any any gdb: 120 Referenced to phase 2:NBTL and 6:SBT, Start of Green 10: Donval Road & Wyecroft Road 10: Donval Road & Wyecroft Road 12: 6.28	Flash Dont Walk (s)		11.0		11.0			27.0		27.0	
any gith: 120 Referenced to phase 2:NBTL and 6:SBT, Start of Green aled-Coordinated 10: Donval Road & Wyecroft Road 10: Donval Road & Wyecroft Road 10: 20: 00: 00: 00: 00: 00: 00: 00: 00: 0	Pedestrian Calls (#/hr)		0		0			0		0	
9th: 120 Referenced to phase 2:NBTL and 6:SBT, Start of Green ated-Coordinated 10: Donval Road & Wyecroft Road 142.8 9th: 20.8	Intersection Summary										
9ghr. 120 Referenced to phase 2:NBTL and 6:SBT, Start of Green ated-Coordinated 10: Donval Road & Wyerroft Road 10: Donval Road & Wyerroft Road 121 € 63	Cycle Length: 120										
Referenced to phase 2::NBTL and 6::SBT, Start of Green aled-Coordinated 10: Donval Road & Wyerroft Road 10: Donval Road & Wyerroft Road 12: 8 - 903 12: 8 - 903	Actuated Cycle Length: 120										
aled-Coordinated 10: Donval Road & Wyecroft Road	Offset: 103 (86%), Reference	ced to phas	2:NBTL	and 6:SE	3T, Start o	of Green					
10: Donval Road & Wyecroft Road 10: Donval Road & Wyecroft Road 10: 0 1	Control Type: Actuated-Coo	ordinated									
10. Duran Nada a Nyadan Nada √ 02 (R)		Dood level	Why or	Po od							
42s (R) 42s (A) 440	H	olval Ivoau	× vydC	וו ואסמח		Ľ					
17.5 42.5 21.5 40.8	•	2 (R.)				\$	9		†		
	17 s 42 s					218		4	s o		

₩ 08 700 ♦ ♦ Ø6 (R) **√** Ø5

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Future Total PM (Phase 1) Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

	1	†	>	ļ	4	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	418	418	65	86	527	103	1467	130	1462	
v/c Ratio	0.98	0.57	0.22	0.47	0.89	0.42	0.85	0.18	0.64	
Control Delay	90.1	30.8	30.4	55.4	46.8	13.8	37.5	39.5	27.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	90.1	30.8	30.4	55.4	46.8	13.8	37.5	39.5	27.3	
Queue Length 50th (m)	51.2	30.1	11.0	21.9	89.9	8.2	135.2	12.6	91.3	
Queue Length 95th (m)	#82.7	45.1	19.8	36.6	127.6	m11.4 m#160.4	#160.4	21.8	126.8	
Internal Link Dist (m)		155.6		199.3			494.4		672.1	
Turn Bay Length (m)	115.0		145.0			65.0		125.0		
Base Capacity (vph)	428	1004	369	474	593	270	1735	202	2274	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.98	0.42	0.18	0.21	0.89	0.38	0.85	0.18	0.64	

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

Movement	### EBT EBR 220 165 220 165 220 165 220 165 220 165 220 165 230 140 2324 11.00 2324 17.90 20.92 239 179 294 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%	MBL 60 60 60 60 60 100 1,00 1,00 1,00 0,95 9,53 9,53 9,53 6,5 6,5 6,5 6,5 6,5 6,5 6,5 7,0 8,5 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0 1,0	→ 90 90 1900 7.0 1.00 1	WBR 485 485 1900 5.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	NBL 95 95 95 1900 1.00 1.00 1.00 1.00 0.35 1736 0.14 0.14 0.92 1032 1032 1032 1032 1032 1032 1032 103	NBT 1310 1310 1310 1300 1300 1300 1300 130	40 40 1900	SBL 120 120 1900 5.0	SBT 1135 1135 1900 7 7 0 7 0 7 0 1900	210 210
385 385 385 385 1900 5.0 1.00 1.00 1.00 0.97 3213 3213 10.92 418 10.92 10.92 10.92 10.92 10.92 10.92 10.92 10.97 1		£ 47440 £ 0 \$ 0	490 90 90 1900 1900 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	485 485 485 1900 5.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	95 95 95 1900 5.0 1.00 1.00 1.00 1.00 1.00 0.05 1.736 0.05 1.00 0.05 1.00 1.00 1.00 1.00 1.00	1310 1310 1310 1310 1310 1300 1300 1300	40 40 1900	120 120 1900 5.0	1135 1135 1135 1900	21 21
385 385 1900 1900 5.0 1.00 1.00 1.00 1.00 0.95 3213 3213 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		£ 4446000	90 90 1900 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	485 1900 5.0 1.00 0.39 1.00 1.590 1.00 1.590 1.500 1.5	95 95 1900 1000 1000 1000 1000 1000 1000	1310 1310 1310 7.0 7.0 1.00 1.00 1.00	40 40 1900	120 120 1900 5.0	1135	22 25
385 1900 1900 100 100 1.00 1.00 1.00 1.00 1		£ 17770000	90 1900 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	485 1900 5.0 1.00 0.39 1.00 1.590 1.590 1.590 1.590 1.590 1.500 1.	95 1900 5.0 100 100 100 100 100 100 103 103 103 10	1310 1.00 1.00 1.00 1.00	1900	120	1135	27
1900 5.0 6.0 7.00 1.00 1.00 0.95 3213 0.95 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.97 1.00 0.97 1.00 0.97 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		5 77 7 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	5.0 1.00 0.39 1.00 0.85 1.00 1.590 1.00 1.590 1.00 1.590 1.00 1.590 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	1900 1,000 1	7.0 7.0 1.00 1.00 1.00	1900	1900	1900	200
5.0 0.37 1.00 1.00 1.00 0.95 3213 0.95 0.95 1.00 0.95 1.00 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0			7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.92 98 98	5.0 1.00 0.39 1.00 0.85 1.00 1.590 0.92 527 55 55	5.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	1.00		2.0		58
0.07 1.00 1.00 1.00 0.05 0.05 3213 3213 418 0.05 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92			1.00 1.00 1.00 1.00 1.00 1.00 1.00 98 98	100 0.99 1.00 0.85 1.00 1.50 1.50 0.92 5.27 5.57 472	100 100 100 100 100 100 100 100 100 100	1.00		0	2. 2	
1.00 1.00 1.00 0.95 0.95 3213 0.92 418 ()			1.00 1.00 1.00 1.00 1.00 1.00 1.00 98 98	1.00 0.85 1.00 1.590 1.00 1.590 0.92 527 55	1.00 1.00 0.95 1.736 0.14 2248 0.92 103 103	1.00		100	100	
1.00 0.95 3.213 3.213 0.92 4.18 0.92		- 0 - 0 · 0	1.00 1.00 1.00 1.00 1.00 0.92 98 98 98	0.85 1.00 1.00 1.00 1.00 0.92 527 55 472	1.00 0.95 1736 0.14 248 0.92 103 103	1.00		1.00	1.00	
0.95 3213 0.95 3213 3213 0.95 10 10 10 10 10 10 10 10 10 10 10 10 10		0 - 0 - 0	1.00 1.27 1.00 1.27 0.92 98 0	1.00 1.590 1.00 1.90 0.92 527 55 472	0.95 1736 0.14 248 0.92 103 103	1.00		1.00	0.98	
3213 0.95 3213 0.092 418 0) 0 1) 418		-000	1727 1.00 1727 0.92 98 0	1590 1.00 1590 0.92 527 55 472	1736 0.14 248 0.92 103 0 103	101		0.95	1.00	
0.95 3213 ; 0.92 418 0 0			1.00 1727 0.92 98 0 0	1.00 1590 0.92 527 55 472	0.92 0.92 103 103 103	1		3502	4968	
3213 ; 0.92 418 () 0 0 1) 418			0.92 98 0 98	0.92 0.92 527 55 472	248 0.92 103 0 103	1.00		0.95	1.00	
(1) 418 (1) 418 (1) 418 (1)		0	0.92 98 0	0.92 527 55 472	0.92 103 103	5041		3502	4968	
418 on (vph) 0 ow (vph) 418 fhr) 1			86 0 86	527 55 472	103	0.92	0.92	0.92	0.92	0.92
			0 86	472	103	1424	43	130	1234	228
			86	472	103	က	0	0	17	_
Confl Peds (#/hr)				_	_	1464	0	130	1445	
							_	_		
Heavy Vehides (%) 9%	NA NA	_	10%	%	4%	5%	5%	%0	%	2%
Bus Blockages (#/hr) 0	AN	0	0	0	0	က	0	0	0	
Turn Type Prot		pm+pt	¥	vo+md	pm+pt	≨		Prot	ΑĀ	
Protected Phases 7	4	က	∞	-	2	2		_	9	
		∞		00	2					
) 16.0	22.6	24.6	15.6	39.8	51.1	40.2		24.2	53.5	
s) 16.0	22.6	24.6	15.6	39.8	51.1	40.2		24.2	53.5	
0.13	0.19	0.21	0.13	0.33	0.43	0.34		0.20	0.45	
	7.0	2.0	7.0	2.0	2.0	7.0		2.0	2.0	
Vehicle Extension (s) 5.0	5.0	2.0	2.0	2.0	2.0	2.0		2.0	2.0	
(vph) 428	609	257	224	527	240	1688		902	2214	
c0.13	60.0	0.02	90.0	c0.18	0.04	c0.29		0.04	0.29	
Perm		0.03		0.12	0.14					
0.98	0.48	0.25	0.44	0.90	0.43	0.87		0.18	0.65	
51.8	43.4	39.4	48.2	38.1	21.4	37.4		39.7	26.0	
1.00	1.00	1.00	1.00	1.00	0.77	0.90		1.00	1.00	
	1.2	- -	2.8	18.7	4.	3.6		0.3	1.5	
89.2	44.6	40.4	51.0	26.8	17.9	37.4		40.0	27.5	
ш	О	Ω	۵	ш	ш	۵		۵	ပ	
y (s)	6.99		54.4			36.2			28.5	
Approach LOS	ш					۵			O	
Intersection Summary										
HCM 2000 Control Delay	41.7	모	M 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	0.90									
Actuated Cycle Length (s)	120.0		m of lost	Sum of lost time (s)			24.0			
Intersection Capacity Utilization	83.6%		J Level c	ICU Level of Service			ш			
Analysis Period (min)	15									

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HCM Unsignalized Intersection Capacity Analysis 11: Speers Road & Interim Connection

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

																																								∢	
																											SB 2	49	0	49	810	90:0	1.5	9.7	⋖						
•	SBR	¥.	45	42			0.92	49									0.80	630			22	6.9		3.3	&	810	SB 1	33	83	0	295	0.11	2.8	18.7	ပ	13.4	മ			f Service	
۶	SBL	<u>,-</u>	99	8	Stop	%0	0.92	83									0.82	1761	1226	536	1283	8.9	2.8	3.5	8	292	WB2	468	0	71	1200	0.28	0.0	0.0						ICU Level of Service	
4	WBR		92	92			0.92	71																			WB1	793	0	0	1200	0.47	0.0	0.0		0.0				O	
ţ	WBT	₩	1095	1095	Free	%0	0.92	1190						TWLTL	2	162											EB3	438	0	0	1700	0.26	0.0	0.0					0.7	47.4%	15
†	EBT	‡	802	802	Free	%0	0.92	875						TWLTL TWLTL	2	73											EB2	438	0	0	1700	0.26	0.0	0.0							
1	EBL	۳	45	42			0.92	49									0.80	1261			838	4.1		2.2	92	648	EB 1	49	49	0	648	0.08	1.9	11.0	ш	9.0				L.	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Without Kerr St Improvements

BA Group - EFS

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Timings
14: Kerr Street & Rail Track
Upper Kerr Village (8124-01)

Splits and Phases: 14: Kerr Street & Rail Track

Without Kerr St Improvements BA Group - EFS

Queues			Future Total PM (Phase 1)
14: Kerr Street & Rail Track	Track		Upper Kerr Village (8124-01)
	←	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	703	625	
v/c Ratio	0.49	0.43	
Control Delay	9.5	8.4	
Queue Delay	53.0	0.0	
Total Delay	62.1	8.4	
Queue Length 50th (m)	85.4	71.2	
Queue Length 95th (m)	107.7	90.5	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1442	
Starvation Cap Reductn	840	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.17	0.43	
Intersection Summary			

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total PM (Phase 1) Upper Kerr Village (8124-01)

	1	†	<i>></i>	>	Į.	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	675	0	0	009	0
Future Volume (vph)	0	0	0	0	0	0	0	675	0	0	009	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			2.0	
Lane Util. Factor								1.00			1.00	
Fr								1.00			1.00	
Fit Protected								1.00			1.00	
Satd. Flow (prot)								1881			1881	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1881	
Peak-hour factor, PHF	96:0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96:0	96.0	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	703	0	0	625	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	703	0	0	625	0
Heavy Vehides (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	1%	%0
Turn Type								¥			NA	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1442	
v/s Ratio Prot								c0.37			0.33	
v/s Ratio Perm												
v/c Ratio								0.49			0.43	
Uniform Delay, d1								7.8			7.3	
Progression Factor								1.00			1.00	
Incremental Delay, d2								1.2			1.0	
Delay (s)								9.0			8.3	
Level of Service								∢			∢	
Approach Delay (s)		0.0			0.0			9.0			8.3	
Approach LOS		∢			∢			∢			⋖	
Intersection Summary												
HCM 2000 Control Delay			8.7	¥	3M 2000	HCM 2000 Level of Service	Service		⋖			
HCM 2000 Volume to Capacity ratio	city ratio		0.38									
Actuated Cycle Length (s)			180.0	S	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	tion		38.9%	೦	U Level o	ICU Level of Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

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HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2)

1: Kerr Street & Wyecroff Road

Upper Kerr Village (8124-01)

	4	>	€	←	→	*	
Movement	EBE	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	r	¥.	r	*	₩		
Traffic Volume (veh/h)	2	8	200	325	475	125	
Future Volume (Veh/h)	2	06	200	325	475	125	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Hourly flow rate (vph)	2	96	213	346	202	133	
Pedestrians							
Lane Width (m)							
Walking Speed (m/s)							
Percent Blockage							
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)							
pX, platoon unblocked							
	1170	319	638				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	1170	319	638				
tC, single (s)	8.9	7.0	4.1				
tC, 2 stage (s)							
tF (s)	3.5	3.3	2.2				
p0 queue free %	97	88	11				
cM capacity (veh/h)	146	674	942				
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
Volume Total	2	96	213	173	173	337	301
Volume Left	2	0	213	0	0	0	0
Volume Right	0	96	0	0	0	0	133
SSH	146	674	942	1700	1700	1700	1700
Volume to Capacity	0.03	0.14	0.23	0.10	0.10	0.20	0.18
Queue Length 95th (m)	8.0	3.8	9.9	0.0	0.0	0.0	0.0
Control Delay (s)	30.5	11.2	6.6	0.0	0.0	0.0	0.0
Lane LOS	۵	ш	∢				
Approach Delay (s)	12.2		3.8			0.0	
Approach LOS	В						
Intersection Summary							
Angelon Colon	l	l	30	ı	l	l	
Average Delay			71 5%	Ξ	ICTLI eyel of Service	Spring	٧
Analysis Boring (min)			5. T	2	במעם ס	201	c
Analysis Period (min)			2				

With Kerr St Improvements
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Timings 2: Kerr Street & Shepherd Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

Traffic Volume (vph) 120 0 300 70 90 420 Future Volume (vph) 120 0 300 70 90 420 Traffic Volume (vph) 120 0 300 70 90 420 Traffic Volume (vph) 120 0 300 70 90 420 Traffic Volume (vph) 120 0 300 70 90 420 Traffic Volume (vph) 120 0 300 70 90 420 Traffic Volume (vph) 120 0 30 70 90 420 Permitted Phases 3 8 2 2 1 6 6 Detector Phase 3 8 2 2 1 6 Switch Phase 4 2 2 1 1 0 282 220 Minimum Initial (s) 50 50 180 180 7.0 180 5.0 Minimum Spit (s) 200 510 42.0 42.0 15.0 57.0 310 Traffic Spit (s) 30 3.3 3.3 3.3 4.0 3.3 3.0 Minimum Gren (s) 10 10 1.9 1.9 1.0 0.0 Traffic Spit (s) 200 0.0 0.0 0.0 0.0 Traffic Spit (s) 30 3.0 3.0 3.0 3.0 3.0 3.0 Traffic Spit (s) 30 3.0 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Traffic Spit (s) 110 130 130 3.0 3.0 3.0 3.0 3.0 3.0 The Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Traffic Spit (s) 1.0 1.0 130 13.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0		WBL	WBT	- NBT	W W	정 *	▶ SBT	94	
(vph) 120 0 300 70 90 420 8es 3 8 2 2 6 6 8 9 8 2 2 1 6 6 9 9 8 2 2 1 6 6 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9		120	<u>*</u> 0	300	2	06	450		
ses 8 2 2 6 9 8 2 2 6 9 9 8 2 2 6 9 9 8 2 2 6 9 1 6 6 9 9 1 2 2 1 6 9 1 6 6 9 1 8 1 2 2 1 6 9 1 8 1 2 2 2 1 6 9 1 8 1 2 2 1 6 9 1 8 1 2 2 2 1 6 9 1 8 1 2 2 2 1 6 9 1 8 1 2 2 2 1 6 9 1 9 1 1 1 1 1 1 1 1 1 1 9 1 1 1 1 1		120	0	300	70	90	420		
ses 3 8 2 1 6 ses 8 8 2 1 6 ses 9 8 2 6 ses 9 8 2 6 ses 9 8 2 1 6 ses 9 8 2 1 6 ses 9 8 2 1 6 ses 9 9 22.0 88.2 110 28.2 ses 9 0 22.0 28.2 28.2 110 28.2 ses 9 0 22.0 38.3 110 28.2 ses 9 0 22.0 33.3 140 33 ses 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		pm+pt	NA	NA	Perm	pm+pt	₹		
(s) 5.0 18.0 18.0 18.0 18.0 (s) 2 6 (s) 6 (s) 2.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18		က	∞	2		~	9	4	
(s) 5.0 5.0 18.0 18.0 7.0 18.0 2.0 2.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 11.0 28.2 28.2 28.2 28.2 28.2 28.2 29.2 29.2	SS	∞			2	9			
(s) 5.0 5.0 18.0 18.0 7.0 18.0 (s) 18.0 (s) 9.0 22.0 28.2 28.2 11.0 28.2 28.0 11.0 28.2 20.0 51.0 42.0 42.0 15.0 57.0 18.0 18.5% 47.2% 38.8% 38.8% 13.9% 52.8% 13.0 3.0 3.0 3.3 3.3 4.0 3.3 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0		က	∞	2	2	-	9		
(s) 5.0 5.0 18.0 18.0 18.0 18.0 (s) 5.0 5.0 18.0 18.0 18.0 20.0 22.0 28.2 28.2 11.0 28.2 20.0 51.0 42.0 42.0 42.0 42.0 42.0 42.0 42.0 42	h Phase								
(s) 9.0 22.0 28.2 28.2 110 28.2 20.0 51.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 15.0 42.0 42.0 15.0 42.0 42.0 42.0 42.0 42.0 42.0 42.0 42	num Initial (s)	2.0	5.0	18.0	18.0	7.0	18.0	5.0	
18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 16.9% 15.0% 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	num Split (s)	0.6	22.0	28.2	28.2	11.0	28.2	22.0	
185% 472% 389% 389% 139% 528% 16.0 47.0 38.8 36.8 41.0 51.8 16.0 47.0 38.8 36.8 41.0 51.8 16.0 47.0 38.8 36.8 41.0 51.8 16.0 47.0 38.8 36.8 41.0 51.8 16.0 47.0 38.8 41.0 51.8 16.0 47.0 38.8 41.0 51.8 16.0 47.0 38.8 41.0 51.8 16.0 47.0 41.0 51.8 16.0 47.0 41.0 51.8 16.0 47.0 41.0 51.8 16.0 47.0 47.0 47.0 47.0 47.0 47.0 47.0 47	Split (s)	20.0	51.0	45.0	45.0		57.0	31.0	
st (s) 16.0 47.0 36.8 36.8 11.0 51.8 (s) 3.3 3.3 3.3 4.0 3.3 3.3 (s) 4.0 3.3 (s) 5.1 (s) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Split (%)	18.5%	47.2%	38.9%	38.9%		25.8%	29%	
3.0 3.0 3.3 3.3 4.0 3.3 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	mum Green (s)	16.0	47.0	36.8	36.8		51.8	27.0	
1.0 1.0 1.9 1.9 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	w Time (s)	3.0	3.0	3.3	3.3		3.3	3.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ed Time (s)	1.0	1.0	6.1	1.9		1.9	1.0	
Lead Leg Leg Lead Ves Yes Yes 3.0 3.0 3.5 3.5 2.5 3.5 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time Adjust (s)	0.0	0.0	0.0	0.0		0.0		
Lead Leag Lead Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Lost Time (s)	4.0	4.0	5.2	5.2		5.2		
Yes Yes Yes Yes Yes 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Λag	Lead		Lag	Lag			Lag	
30 3.0 3.5 3.5 2.5 3.5 3.6 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	-Lag Optimize?	Yes		Yes	Yes			Yes	
30 30 30 30 30 30 30 00 00 00 00 00 00 0	de Extension (s)	3.0	3.0	3.5	3.5		3.5	3.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	num Gap (s)	3.0	3.0	3.0	3.0		3.0	3.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Before Reduce (s)	0.0	0.0	0.0	0.0		0.0	0.0	
None None Min Min None Min 7.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0	To Reduce (s)	0.0	0.0	0.0	0.0		0.0	0.0	
7.0 10.0 10.0 10.0 11.0 13.0 13.0 13.0 13	III Mode	None	None	Min	E.	None	Min	None	
11.0 13.0 13.0 13.0 0 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Time (s)		7.0	10.0	10.0		10.0	7.0	
ιο Ο	ו Dont Walk (s)		11.0	13.0	13.0		13.0	11.0	
section Summary Length: 108 ated Cycle Length: 45.7	estrian Calls (#/hr)		0	2	2		2	0	
b Length: 108 ated Cycle Length: 45.7 ral Cycle: 75	section Summary								
ated Cycle Length: 45.7 ral Cycle: 75	e Length: 108								
al Cycle: 75	ated Cycle Length: 45.7								
	al Cycle: 75								
rol Type: Semi Act-Uncoord	Control Type: Semi Act-Uncoord	pı							



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Future Total AM (Phase 2) Oueues

Queues 2: Kerr Street & Shepherd Road	epherd	Road					Future Otal AM (Phase 2) Upper Kerr Village (8124-01)
	>	ţ	←	*	٠	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	132	236	330	12	66	462	
v/c Ratio	0.41	0.35	0.22	0.11	0.14	0.22	
Control Delay	22.0	1.4	10.2	5.9	4.0	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.1	
Total Delay	22.0	1.4	10.2	2.9	4.7	4.6	
Queue Length 50th (m)	9.7	0.0	9.3	0.0	2.4	7.0	
Queue Length 95th (m)	23.9	0.0	17.5	4.9	6.9	14.0	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	602	1510	2811	1215	771	3462	
Starvation Cap Reductn	0	0	0	0	462	1587	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	0.16	0.12	90:0	0.32	0.25	
Intersection Summary							

Synchro 11 Report Page 3 With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total AM (Phase 2)
Upper Kerr Village (8124-01)

Control Cheen EBI EBI EBI WBI		4	†	1	-	Ļ	4	•	←	•	۶	→	*
three (pc) 1 0 0 120 0 215 0 300 70 90 420 0 120 0 120 0 215 0 300 70 90 420 0 120 0 120 0 120 0 120 0 120 0 120 0 120 0 120 0 120 1300 130	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
tume (sph) 0 0 120 0 215 0 300 70 90 420 tume (sph) 0 0 120 0 215 0 300 70 90 420 fune (sh) 1 0 0 1 0 1 0 90 420 fune (sh) 1 0 1 0 1 0 90 420 fune (sh) 1 0 1 0 1 0 90 420 fune (sh) 1 0 1 0 1 0 90 420 fulless 1 0 1 0 1 0 90 420 fulless 1 0 1 0 1 0 90 420 fulless 1 0 1 0 1 0 90 420 field 1 0 1 0 1	Lane Configurations	*	43		×	€3		×	*	ĸ	K	**	*
Ulme (vph) 0 0 120 0 120 130 70 90 420 Hopidal 1900	Traffic Volume (vph)	0	0	0	120	0	215	0	300	02	06	420	0
February 1900 190	Future Volume (vph)	0	0	0	120	0	215	0	300	70	06	420	0
Fedorary 100 140	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Factor 100 100 0.95 100 0.95 100 1	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Decides 100 0.97 100 1.00	Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
The control Delay 100 10	Frpb, ped/bikes				1:00	0.97			1.00	0.97	1.00	1:00	
Total Control Contro	Flpb, ped/bikes				1.00	1.00			1.00	1.00	1.00	1.00	
read 0.95 1.00 <th< td=""><td>ت</td><td></td><td></td><td></td><td>1.00</td><td>0.85</td><td></td><td></td><td>1.00</td><td>0.85</td><td>1.00</td><td>0.1</td><td></td></th<>	ت				1.00	0.85			1.00	0.85	1.00	0.1	
Fig. 2016 Fig. 3016 Fig.	Fit Protected				0.95	1.00			1.00	1.00	0.95	1.00	
Action (perm) 1274 1550 3497 1499 861 3505 Action (pol) 0 0 0 132 159 0 0 0 0 177 0	Satd. Flow (prot)				1664	1229			3497	1499	1/85	3505	
Protection Part Color	Satd. Flow (perm)				1274	1559			3497	1499	861	3505	
(vph) 0 0 132 0 236 0 330 77 99 462 duction (vph) 0 0 0 132 59 5 5 5 5 5 5 6 0 <th< td=""><td>Peak-hour factor, PHF</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td></th<>	Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
duction (vph) 0 0 0 177 0	Adj. Flow (vph)	0	0	0	132	0	236	0	330	77	66	462	0
up Flow (rph) 0 0 132 59 0 330 39 462 side(HVI) 5 5 5 5 5 5 5 5 5 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 9 462 6 0 <t< td=""><td>RTOR Reduction (vph)</td><td>0</td><td>0</td><td>0</td><td>0</td><td>177</td><td>0</td><td>0</td><td>0</td><td>47</td><td>0</td><td>0</td><td>0</td></t<>	RTOR Reduction (vph)	0	0	0	0	177	0	0	0	47	0	0	0
sis (#Inft) 5 <th< td=""><td>Lane Group Flow (vph)</td><td>0</td><td>0</td><td>0</td><td>132</td><td>29</td><td>0</td><td>0</td><td>330</td><td>30</td><td>66</td><td>462</td><td>0</td></th<>	Lane Group Flow (vph)	0	0	0	132	29	0	0	330	30	66	462	0
hickes (%) 0% 0% 0% 8% 0% 0% 0% 2% 5% 1% 3% 1% 3% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Confl. Peds. (#/hr)	2		2	2		2			2	2		
rages (#Inf) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Heavy Vehides (%)	%	%	%	%	%	%0	%0	5%	2%	%	%	% '
seperate Perrm Inhabets Perrm Inhabets I	Bus Blockages (#/hr)	0	0	0	0	2	0	0	9	0	0	0	0
Phases 4 3 8 2 1 Ghesses 4 3 8 2 2 6 Ghesses 4 8 2 2 6 1 1 1 1 1 1 1 1 1 1 1 2 2 6 1 2 2 6 1 2 3	Turn Type	Perm			pm+pt	≨		Perm	≨	Perm	pm+pt	Ϋ́	Perm
Princes 4 126 126 126 1294 194 2 87 2 Green, G (s) 126 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 194 2 87 2 Green, G (s) 126 126 126 126 126 126 126 126 126 126	Protected Phases	,	4		က	∞		c	2	c	- (9	(
12	Actinitied Priases	4			0 9 0	3 01		7	101	7 01	0 0 0	7 00	P
Operation (s) OLZ SO OLZ	Effective Green a (s)				12.6	12.6			107	10.1	28.7	28.7	
Street S	Actuated o/C Ratio				0.25	0.25			038	3 2	0.57	0.57	
Attension (s) 3.0 3.0 3.0 3.5 3.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	Clearance Time (s)				4 0	4.0			52	5.2	4.0	5.2	
Cap (vph) 372 388 1343 575 586 14 Prof. c0.05 0.04 0.09 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.00 0.00 0.17 0 0.00 0.17 0 0.00 0.17 0 0.00 0.17 0 0.00 0.17 0 0.17 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.1 0.0 <td>Vehicle Extension (s)</td> <td></td> <td></td> <td></td> <td>3.0</td> <td>3.0</td> <td></td> <td></td> <td>3.5</td> <td>3.5</td> <td>2.5</td> <td>3.5</td> <td></td>	Vehicle Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
Prof. co0.05 0.04 0.09 0.02 od Perm c.0.04 0.09 0.02 0.08 Perm c.0.04 0.05 0.08 0.08 Delay, d.1 1.5 1.48 0.5 0.07 1.7 Delay, d.2 1.00 1.00 1.00 1.00 1.00 1.00 Ist Delay, d.2 0.0 0.1 1.5 1.0 1.0 0.1 0.1 0.0 1.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 </td <td>Lane Grp Cap (vph)</td> <td></td> <td></td> <td></td> <td>372</td> <td>388</td> <td></td> <td></td> <td>1343</td> <td>575</td> <td>586</td> <td>1991</td> <td></td>	Lane Grp Cap (vph)				372	388			1343	575	586	1991	
Perm co 0.04 0.05 0.06 0.07 0.08 0.05 0.06 0.05 0.06 0.05 0.05 0.07 0.08 0.05 0.05 0.05 0.07 0.06 0.05 0.05 0.07 0.06 0.02 0.00 0.00 0.00 0.00 0.00 0.00	v/s Ratio Prot				c0.05	0.04			60.0		0.02	00.13	
10 10 10 10 10 10 10 10	v/s Ratio Perm				c0.04					0.02	0.08		
belay, d1 15.5 14.8 10.6 9.8 5.2 and Eacher 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio				0.35	0.15			0.25	0.02	0.17	0.23	
100 100	Uniform Delay, d1				15.5	14.8			10.6	8.6	5.2	5.4	
10	Progression Factor				1.00 0	00.1			1.00	1.00	3.0	0.1	
10.7 10.8	Incremental Delay, d2				9.0	0.2			0.1	0.0	0.1	0.1	
0.0 B B B B A A A A B B B B B B B B B B B	Delay (s)				16.1	15.0			10.7	9.8	5.3	5.5	
0.0 15.4 10.5 A B B B A CALL Subject to the control of Service A Society ratio 0.33 Sum of lost time (s) 17.2 Society ratio 56.0% ICU Level of Service B 15	Level of Service				ш	<u>а</u>			ш :	∢	∢	∢ ;	
A B B B 9.7 HCM 2000 Level of Service A 9.7 HCM 2000 Level of Service A 9.7 HCM 2000 Level of Service A 50.5 Sum of lost time (s) 17.2 2ation 56.0% ICU Level of Service B	Approach Delay (s)		0.0			15.4			10.5			5.4	
9.7 HCM 2000 Level of Service 0.33 Sum of lost time (s) 50.5 Sum of lost time (s) 15 ICU Level of Service	Approach LOS		⋖			ш			В			⋖	
9.7 HCM 2000 Level of Service 0.33 Sum of lost time (s) 56.0% ICU Level of Service 15	Intersection Summary												
oscity ratio 0.33 n 50.5 Sum of lost time (s) zation 56.0% ICU Level of Service 15 15	HCM 2000 Control Delay			9.7	¥	CM 2000	Level of 5	Service		A			
50.5 Sum of lost time (s) zation 56.0% ICU Level of Service	HCM 2000 Volume to Capac	city ratio		0.33									
ilitzation 50,0% ICU Level of Service 15	Actuated Cycle Length (s)			50.5	ഗ്ഗ ⊆	ım of lost	time (s)			17.2			
	Analysis Dariod (min)	IIOII		30.0%	2	n revei c	oei vice			۵			
	Analysis reliou (IIIII)			2									

With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	<i>></i>	-	ļ	4	•	←	•	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩	¥C	je-	₩	X	F	*	¥C	1	+	R.
Traffic Volume (vph)	6	770	100	195	220	165	105	115	370	325	150	105
Future Volume (vph)	6	770	100	195	220	165	105	115	370	325	150	105
Turn Type	pm+pt	Ϋ́	Perm	pm+pt	Ϋ́	Perm	pm+pt	Š	Perm	Prot	₹	Perm
Protected Phases	-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4			∞
Detector Phase	-	9	9	2	2	2	7	4	4	က	∞	00
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Total Split (s)	11.0	42.0	45.0	14.0	45.0	45.0	11.0	40.0	40.0	24.0	53.0	53.0
Total Split (%)	9.2%	32.0%	32.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7	33.7	21.0	46.7	46.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	S-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		15	15		35	35		32	35
Intersection Summary												

Splits and Phases: 3: Kerr Street & Speers Road

Cycle Length: 120
Actuated Cycle Length: 120
Offset 43 (36%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

40 **√** Ø7 ∯ Ø8 √ øs • ♣ø6 (R) **★** Ø2 (R) 01

Synchro 11 Report Page 5 With Kerr St Improvements BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

SBR 122 0.21 5.1 0.0 5.1 10.3 75.0 0.24 SBT 174 0.29 29.6 29.6 29.6 29.8 41.5 SBL 378 0.76 59.2 0.0 59.2 44.3 56.1 80.0 0 0.65 430 430 0.91 49.8 61.3 #98.3 45.0 523 134 0.30 37.5 0.0 37.5 24.8 39.1 519 122 0.29 21.0 0.0 21.0 15.7 50.0 418 0 0 0 0.29 192 0.27 5.1 0.0 0.0 13.6 100.0 0.0 31.0 31.0 31.0 65.8 82.5 474.4 1342 WBL 227 227 0.76 40.7 40.7 31.8 #76.2 75.0 116 0.21 5.8 0.0 5.8 1.5 7.9 75.0 551 895 0.80 39.0 0.0 39.0 111.0 130.2 1116 359 0 0 0 0 0 0 0 105 0.30 18.5 0.0 18.5 9.5 Total Delay

Queue Length 50th (m)

Queue Length 50th (m)

Queue Length 50th (m)

Lunal Link Dist (m)

Ium Bay Length (m)

Base Capacity (vph)

Sarvation Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Reduced v/c Ratio Lane Group Flow (vph) Control Delay Queue Delay

With Kerr St Improvements BA Group - EFS

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

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Total AM /Dk

tal AM (Phase 2)	Upper Kerr Village (8124-01)
Future lot	Oppe

FET EBR WBL WBT WBR MBR	### WBR NBL 570 165 105 570 165 105 570 165 105 570 165 100 100 100 190 1.00 0.96 1.00 1.00 0.96 1.00 0.98 0.98 0.98 0.88 663 149 1.02 0 17 0 0 0 17 0 0 0 17 0 0 0 17 0 0 0 0 0 1.340 68 3.0 5.9 3.0 5.9 3.0 5.9 3.0 5.9 0.39 0.31 6.00 0.00 0.10 0.00 0.10 0.10 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	NBT NBR 115 370 115 370 115 370 1900 1900	SRI	CBT	
(yph) 90 770 100 195 570 165 70 146 70 100 195 570 165 70 100 195 570 165 70 100 195 570 165 70 100 195 570 165 70 100 190 1900 1900 1900 1900 1900 190	\$570 165 105 570 165 105 105 105 105 105 105 105 105 105 10		100	וםס	SBR
(vph) 99 770 100 195 570 165 (vph) 99 777 100 196 570 165 (vph) 1900 1900 1900 1900 1900 1900 1900 190	570 165 105 105 105 105 105 105 105 105 105 10	Ì		*	*
yeh) 90 770 100 195 570 165 191 1910 1900 1900 1900 1900 1900 1900	5.70 165 105 100 100 100 100 100 100 100 100 10	•	325	150	105
(s) 1900 1900 1900 1900 1900 1900 1900 190	1900 1900 1900 1900 1900 1900 1900 1900	•		120	105
State	0.05 100 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 1.00 0.09 0.09		0001	1900	1900
(c)	1.00 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0			5.0	5.0
(#hr) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	00.1	78.0	0.1	00.1
(a) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 0.85 1.00 0.95 1.00 1.00 0.85 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0			00.1	0.95
100 0.88 1.00 1.08 1.00 0.88 1.00 1.08 1.00 0.88 1.00 1.00	1.00 1.038 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	00.1	00.1	00.1	9.1
0.95 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 1.00 0.55 34.38 1495 1674 1.00 1.00 0.65 34.38 1495 1141 0.66 0.86 0.86 0.86 66.3 192 122 66.3 175 122 67.3 175 122 68.3 75 122 68.3 75 122 69.3 75 122 69.3 75 122 69.3 75 122 69.3 75 122 7 2.5 5.5 2.5 1340 68.3 386 0.19 0.05 0.06 0.49 0.13 3.06 0.49 0.13 3.06 0.49 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00			1:00	0.85
1800 3378 1437 1687 3438 1495 1406 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 100 1010 1	3438 1495 1674 100 100 100 100 100 100 100 100 100 10			1.00	1.00
0.35 1.00 0.13 1.00 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.13 1.00 0.03 0.13 1.00 0.03 0.13 1.00 0.03 0.03	1.00 1.00 0.65 34.38 1495 1141 0.88 0.88 0.88 663 192 122 15 20 563 192 122 15 20 0	_	.,	1845	151
1,000	3438 1495 1141 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1.00	1.00
0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86	0.86 0.86 0.86 0.86 663 192 122 0 177 12 0 0 663 75 122 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	·		1845	1511
105 895 116 227 663 192 106 895 116 227 663 192 106 895 39 227 663 175 108 896 110 10 6 117 00% 6% 7% 7% 5% 4% 6% 6% 1 6 2 2 00% 6% 396 577 468 468 47.5 396 396 57.7 468 468 47.5 396 396 57.7 468 468 47.5 396 396 57.7 468 68 47.5 396 396 57.7 468 68 010 03 03 03 049 039 02 02 02 03 03 049 013 010 03 02 02 00 00 00 00 00 01	663 192 122 663 177 0 663 177 122 5% 4% 6% 0	86 0.86	98.0 €	98.0	0.86
h) 0 0 77 0 0 117 h) 105 895 39 227 663 75 16 10 10 10 10 0 4 0 0 0 0 0 0 0 117 0 47.5 396 39.6 57.7 46.8 46.8 1 47.5 39.6 39.6 57.7 46.8 46.8 2 5.9 30 6.9 5.9 30 3 0 6.9 30.3 0.48 0.39 3 0 6.9 30.3 0.48 0.39 3 0 7.9 5.9 30 6.9 5.9 1 2.5 5.5 5.5 5.5 5.5 5.5 5.5 2 1.1 37.7 23.4 27.7 23.5 2 21.1 37.7 23.4 27.7 23.5 2 21.1 37.7 23.7 35.2 29.0 24.0 2 2 2 2 0 3 118 1.3 0.5 2 2 2 1 37.7 23.7 35.2 29.0 24.0 2 2 2 2 0	663 75 122 663 75 122 67 4% 6% 0			174	122
h) 105 895 39 227 663 75 15 15 16 10 10 10 10 10 10 10 10 10 10 10 10 10	663 75 122 7 4% 6% 0			0	8
15	15 20 6 4% 6% 0 0 NA Perm pm+pt 2 2 4 468 468 37.0 6.39 6.39 6.31 5.9 6.39 6.31 5.9 6.9 3.0 5.5 5.5 2.5 1340 583 386 6.19 6.02 0.19 6.02 0.10 1.00 1.00 1.3 6.5 6.3 27.7 23.5 31.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	134 303	3 378	174	4
0% 6% 7% 7% 7% 5% 4% 6% 10% 6% 10% 10% 10% 10% 10% 10% 10% 10% 10% 10	5% 4% 6% 0 0 0 0 0 NA Perm printpt 2 2 4 468 468 37.0 0.39 0.39 0.31 5.9 5.9 3.0 5.5 5.5 2.5 2.5 1340 583 386 0.19 0.05 0.08 0.49 0.13 0.02 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.4 C C C C 29.4 C C C C 29.4 C C C C C 29.4 C C C C C C 29.4 C C C C C C C C C C C C C C C C C C C	35	5 35		20
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pm-pt NA Perm pm-pt NA Perm pr 1 6 6 6 6 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	NA Perm pm+pt 2 7 46.8 46.8 37.0 46.8 46.8 37.0 46.8 46.8 37.0 6.39 6.39 6.31 5.9 5.9 3.0 5.5 5.5 2.5 1340 583 386 0.19 0.02 0.19 0.13 0.22 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 29.0 24.0 31.3 C C C 29.4 C C C 29.4 C C		0 0	0	0
(s) 47.5 39.6 57.7 46.8 46.8 (s) 47.5 30.6 57.7 46.8 46.8 (s) 47.5 30.6 57.7 46.8 6.8 (s) 5.9 5.9 30. 5.9 5.9 (s) 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9 5.9	2 7 46.8 46.8 37.0 46.8 46.8 37.0 46.8 46.8 37.0 0.39 0.39 0.31 5.9 5.9 3.0 5.5 5.5 2.5 1340 583 386 0.49 0.13 0.02 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C C C	NA Perm	n Prot	≨	Perm
(s) 475 396 396 577 468 468 (s) 50 40 53 63 63 63 63 63 63 63 63 63 63 63 63 63	46.8 46.8 37.0 46.8 46.8 37.0 0.39 0.39 0.31 5.9 5.9 3.0 5.5 5.5 2.5 13.4 0.02 0.49 0.13 0.02 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 2.9, 2.4, 0.3 2.9, 2.4, 0.3 2.9, 2.4, 0.3 2.9, 2.5 2.9, 2.5 2.9, 2.5 2.9, 2.5 2.9, 2.5 2.9, 2.5 2.0, 3.0 2.0, 3.0 2.0, 3.0 2.0, 3.0 2.0, 3.0 2.0, 3.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2		က	8	
i, G(s) 47.5 39.6 39.6 57.7 46.8 46.8 i, g(s) 47.5 39.6 39.6 57.7 46.8 46.8 ation 47.5 39.6 37.7 46.8 46.8 46.8 ation 47.0 0.3 0.3 0.3 0.3 0.3 0.3 on (s) 2.5 5.	46.8 46.8 37.0 46.8 46.8 37.0 0.39 0.39 0.31 5.9 5.9 3.0 5.5 5.5 2.5 1340 583 386 0.49 0.13 0.32 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C C	4	4		∞
v,g(s) 47.5 39.6 39.6 57.7 46.8 46.8 atio 0.40 0.33 0.33 0.39 0.39 0.39 v(s) 2.5 5.5 5.5 2.5 5.5	46.8 46.8 37.0 0.39 0.39 0.39 0.31 0.31 0.35 5.5 5.5 2.5 13.0 0.02 0.19 0.12 0.10 1.00 1.00 1.00 1.3 0.32 2.0 24.0 31.3 0.5 0.3 2.0 24.0 31.3 0.5 0.3 2.0 2.4 0.31 3.0 0.5 0.3 2.0 2.4 0.31 3.0 0.5 0.3 2.0 2.4 0.31 3.0 0.5 0.3 2.0 0.3 1.3 0.5 0.3 2.0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0	29.2 29.2	2 17.9	39.3	39.3
atio 0.40 0.33 0.33 0.48 0.39 0.39 o.19 o.18 o.18 o.18 o.18 o.18 o.18 o.18 o.18	0.39 0.39 0.31 5.9 5.9 3.0 5.5 5.5 2.5 1340 583 386 0.19 0.05 0.08 0.49 0.13 0.32 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C C C C C C C C C C C C C C C C C	29.2 29.2		39.3	39.3
ont (s) 3.0 5.9 5.9 3.0 5.9 5.9 5.9 ont (s) 2.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5	5.9 5.9 3.0 5.5 5.5 2.5 13.4 6.3 386 0.19 0.05 0.08 0.49 0.13 0.32 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 2.9,0 24,0 31.3 C C C C 2.94 C C C	Ŭ		0.33	0.33
On (s) 2.5 5.0 5.2 5.0 5.0 5.0 5.0 5.0 5.0 5.2<	5.5 5.5 2.5 1340 583 386 0.19 0.05 0.08 0.49 0.13 0.32 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C 29.4 C C	6.3 6.3		6.3	6.3
(vph) 339 1114 474 292 1340 583 0,02 0.26 -0.01 0.19 0.05 0.05 0.05 0,10 0.03 0.03 0.02 0.05 0.05 0.05 dor 0.31 0.80 0.08 0.78 0.49 0.13 dor 0.89 0.87 27.7 23.4 27.7 23.5 lay, d2 0.4 5.9 0.3 11.8 1.3 0.5 lay, d2 0.1 1.1 37.7 23.7 35.2 29.0 24.0 c D C D C C C r(s) C D C C C r C C C C C r C C C C C	1340 583 386 0.19 0.02 0.02 0.02 0.02 0.02 0.04 0.13 0.32 27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C C C C C C C C C C C C C C C C C	4.0 4.0		4.0	4.0
0.02 0.26 0.010 0.19 0.10 0.10 0.10 0.10 0.03 0.22 0.05	0.19 0.05 0.08 0.49 0.13 0.25 0.08 0.49 0.13 0.22 27.7 23.5 31.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	448 347	7 497	604	494
0.10 0.03 c0.28 0.05 0.31 0.80 0.08 0.78 0.49 0.13 0.31 0.80 0.08 0.77 23.5 0.32 0.87 27.7 23.4 27.7 23.5 0.33 0.87 0.84 1.00 1.00 0.4 0.9 0.87 0.81 1.3 0.5 0.5 0.4 5.9 0.3 11.8 1.3 0.5 0.5 0.1 0.1 0.1 0.1 0.6 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.8 0.8 0.8 0.8 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	0.05 0.08 0.49 0.13 0.22 27.7 23.5 31.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	20.0	c0.11	0.09	
d1 23.4 36.7 27.7 23.4 27.7 23.5 Grove of Section 10.0 Grove 10.0 Grove of Section 10.0 Grove of Section 10.0 Grove of Section 10.0 Grove of Section 10.0 Grove 10.0	0.49 0.13 0.32 27.7 23.5 31.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	c0.21	L		0.03
d1 23.4 36.7 27.7 23.4 27.7 23.5 dd	27.7 23.5 31.0 1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C C 29.4 C	0.30 0.87	92.0 2	0.29	0.08
dor 0.89 0.87 0.84 1.00 1.00 1.00 lay, d2 0.4 5.9 0.3 118 1.3 0.5 lay, d2 0.4 1.00 1.00 1.00 lay, d2 0.4 1.00 1.00 1.00 lay, d2 0.4 1.00 0.5 lay, d2 0.4 1.00 0.5 lay, d2 0.5	1.00 1.00 1.00 1.3 0.5 0.3 29.0 24.0 31.3 C C C C 29.4 C		ľ	30.0	27.9
lay, d2 0.4 5.9 0.3 11.8 1.3 0.5 2.0 24.0 24.0 24.0 2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	1.3 0.5 0.3 29.0 24.0 31.3 C C C C 29.4 C		_	1.00	1.00
a 21.1 37.7 23.7 35.2 29.0 24.0 C C C C C C C C C C C C C C C C C C C	29.0 24.0 31.3 C C C 29.4 C C HCM 2000 Level of Service	0.5 21.2	2 6.5	0.4	0.
(s) C D C D C C (y(s) 34.7 29.4 C C C C C C C C C C C C C C C C C C C	C C C C C C C C C C C C C C C C C C C	37.6 64.9	۷,	30.3	28.0
y (s) 34.7 C C C mmary 38.5				O	O
C mmary 38.5		53.6		44.0	
38.5	HCM 2000 Level of Service	۵		۵	
38.5	HCM 2000 Level of Service				
HCM 2000 Volume to Capacity ratio 0.82					
120.0	Sum of lost time (s)	18.2	2		
Utilization 72.8	ICU Level of Service	O	()		
Analysis Period (min)					

With Kerr St Improvements BA Group - EFS

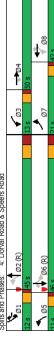
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Future Total AM (Phase 2) Upper Kerr Village (8124-01) Timings 4: Dorval Road & Speers Road

	1	†	*	-	ţ	4	•	←	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	1/4	₩	X _	<u>r</u>	₩	*	F	4₽	F	₩	¥c_	
Traffic Volume (vph)	415	902	40	80	410	315	20	860	280	545	255	
Future Volume (vph)	415	909	40	80	410	315	20	860	280	545	255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	≨	vo+mq	pm+pt	₹	pm+pt	ΑN	Perm	
Protected Phases	7	4		က	∞	Ψ	2	2	Ψ-	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	τ-	2	2	τ-	9	ဖ	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0	13.0	45.0	12.0	11.0	45.0	12.0	46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	10.0%	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0	8.0	7.0	38.0	8.0	39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1.0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		Ω	വ		2			Ω		വ	2	
Intersection Summary												
Cycle Lenath: 120												
Actuated Cycle Length: 120												
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL a	nd 6:SB	IL, Start o	of Green							
Natural Cycle: 135												

Splits and Phases: 4: Dorval Road & Speers Road

Control Type: Actuated-Coordinated



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Queues 4: Dorval Road & Speers Road

Future Total AM (Phase 2) Upper Kert Village (8124-01)

	4	†	<i>></i>	\	ļ	4	•	←	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	451	658	43	87	446	342	9/	1076	304	592	277
v/c Ratio	0.94	0.70	0.09	0.35	0.65	0.54	0.20	0.97	0.98	0.40	0.37
Control Delay	79.4	42.4	0.3	29.2	53.2	14.3	18.1	9.09	71.8	10.6	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.4	42.4	0.3	29.2	53.2	14.3	18.1	9.09	71.8	10.6	3.1
Queue Length 50th (m)	54.8	74.3	0.0	9.2	26.0	34.7	8.5	129.7	37.1	38.9	10.9
Queue Length 95th (m)	#85.1	83.0	0:0	17.7	75.4	63.4	19.6	#174.3 m#143.3	#143.3	46.8	m15.0
Internal Link Dist (m)		412.3			472.1			621.6		494.4	
Turn Bay Length (m)	0.09		0.09	85.0		55.0	70.0		110.0		
Base Capacity (vph)	481	1192	009	256	949	639	387	1111	311	1483	754
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.55	0.07	0.34	0.47	0.54	0.20	0.97	0.98	0.40	0.37

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total AM (Phase 2) Upper Ken Village (8124-01)

	1	†	1	-	ţ	4	•	—	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K 16	₩	R _	F	₩	X	F	4₽		r	44	*
Traffic Volume (vph)	415	605	40	80	410	315	20	860	130	280	545	255
Future Volume (vph)	415	909	40	80	410	315	20	860	130	280	545	255
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.7	7.0	4.0	7.0	4.0	4.0	0.7		4.0	0.7	0.7
Emb ped/hikes	100	100	800	0.0	1.00	00.0	0.0	100		00.0	100	98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
T-L	1.00	1.00	0.85	1.00	1:00	0.85	1.00	0.98		1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1785	3479		1687	3539	1417
Flt Permitted	0.95	1.00	1.00	0.32	1.00	1.00	0.43	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3400	3329	1482	561	3256	1494	802	3479		169	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	658	43	87	446	342	9/	932	141	304	265	277
RTOR Reduction (vph)	0	0	31	0	0	20	0	10	0	0	0	163
Lane Group Flow (vph)	451	658	12	87	446	272	9/	1066	0	304	265	114
Confl. Peds. (#/hr)	2					2	2					5
Heavy Vehicles (%)	3%	%8	%6	%6	10%	7%	1%	2%	%0	42%	2%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	ΑA	Perm	pm+pt	¥	bm+ov	pm+pt	¥		pm+pt	Ν	Perm
Protected Phases	7	4		က	∞	_	2	2		-	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.0	33.8	33.8	33.8	25.3	43.0	44.2	38.0		29.7	49.5	49.5
Effective Green, g (s)	17.0	33.8	33.8	33.8	25.3	43.0	44.2	38.0		29.7	49.5	49.5
Actuated g/C Ratio	0.14	0.28	0.28	0.28	0.21	0.36	0.37	0.32		0.50	0.41	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	2.0		4.0	7.0	2.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	481	937	417	235	989	535	347	1101		307	1459	284
v/s Ratio Prot	c0.13	c0.20		0.03	0.14	0.07	0.01	0.31		00.15	0.17	
v/s Ratio Perm			0.01	0.08		0.11	0.07			00.35		0.08
v/c Ratio	0.94	0.70	0.03	0.37	0.65	0.51	0.22	0.97		0.99	0.41	0.20
Unitorm Delay, d1	51.0	38.6	31.2	32.8	43.3	30.2	25.0	40.4		36.9	24.9	22.5
Progression Factor	1.00	1.00	1.00	1.19	1.15	0.65	1.00	1.00		0.99	0.38	0.61
Incremental Delay, d2	75.0	3.0	0.7	0.1	2.9	0.7	0.3	20.4		40.9	0.6	0.5
Delay (s)	9.0/ L	6. C	د د ر		C.2C	50.3	23.3	00.0		O. T	0.0	
Approach Delay (s)	1	7. 7.)	د	38.6)	>	7 22		١.	28.5	ב
Approach Cody (5)		3			3			2			5	
Approach LOS		Ц			ם			ш			ر	
Intersection Summary												
HCM 2000 Control Delay			45.5	Ì	CM 2000	HCM 2000 Level of Service	Service		□			
HCM 2000 Volume to Capacity ratio	y ratio		0.95									
Actuated Cycle Length (s)			120.0	ਲੋਂ	of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	<u>_</u>		87.7%	2	:U Level	ICU Level of Service			ш			
Analysis Period (min)			C C									
c Critical Lane Group												

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With Kerr St Improvements BA Group - EFS

With Kerr St Improvements BA Group - EFS

^{## 35}th percentile volume exceeds capacity, queue may be longer.
35th percentile volume exceeds capacity, queue may be longer.
25th percentile maximum after two cycles.
Volume for 95th percentile queue is metered by upstream signal.

Timings Future Total AM (Phase 2) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

	5						() - P
	^	†	ţ	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	F	4₽	4₽	¥C	<u>r</u>	42	
Traffic Volume (vph)	၉	875	785	20	8	0	
Future Volume (vph)	30	875	785	20	80	0	
Turn Type	Perm	Ν	Ϋ́	Perm	Perm	N A	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	82.0	82.0	82.0	38.0	38.0	38.0	
Total Split (%)	%8.3%	%8.3%	%8.3%	31.7%	31.7%	31.7%	
Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	31.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	O-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 50	d to phase	4:EBTL	and 8:WB	T, Start o	f Green		
Control Type: Actuated-Coordinated	dinated						
in a second seco							

Splits and Phases: 5: St. Augustine Drive & Speers Road



With Kerr St Improvements

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Queues 5: St. Augustine Drive & Speers Road

Future Total AM (Phase 2) Upper Ken Village (8124-01)

→	SBT	63	0.21	1.5	0.0	1.5	0.0	0.0	93.6		220	0	0	0	0.11			
۶	SBL	91	0.53	62.3	0.0	62.3	20.8	35.4			476	0	0	0	0.19			
•	NBR	23	0.09	9.0	0.0	9.0	0.0	0.0			512	0	0	0	0.04			
Ļ	WBT	868	0.33	2.8	0.0	2.8	36.6	48.2	42.5		2758	0	0	0	0.33			
†	EBT	1011	0.37	2.1	0.0	2.1	15.0	m21.8	472.1		2754	0	0	0	0.37			
1	EBL	82	0.07	2.1	0.0	2.1	0.8	m1.6		20.0	469	0	0	0	0.07			
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	C	Intersection Summary	1111

m Volume for 95th percentile queue is metered by upstream signal.

Future Total AM (Phase 2) Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Movement		1	†	~	>	Ļ	4	•	←	•	۶	→	•
March Marc	Movement	EB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900 1900	Lane Configurations	*	₽			₩₽				*	r	£,	
1900 1900	Traffic Volume (vph)	8	875	15	0	785	2	0	0	20	80	0	55
1500 1900	Future Volume (vph)	9	875	15	0	785	2	0	0	20	80	0	22
5.9 5.9 5.9 6.3 <td>Ideal Flow (vphpl)</td> <td>1900</td>	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 0.95 0.95 1.00	Total Lost time (s)	2.9	5.9			2.9				6.3	6.3	6.3	
1.00 1.00	Lane Util. Factor	1:00	0.95			0.95				1.00	1.00	1.00	
1,00	Frpb, ped/bikes	1:00	1.00			1:00				1.00	1.00	1.00	
1,00	Flpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
1,00 0.95 1.00 1.00 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.91 1.00 0.91 1.00 0.91 1.00 0.91 1.00 0.91 1.00 0.91 1.00 0.91 1.00 0.91 1.00 0.92 1.00 0.91 1.00 0.92 1.00 0.91 1.00 0.92 1.00 0.92 1.00 0.92 1.00 0.92 0.93 0.93 0.93 0.93 0.94 1.1 0.95 0	T.	1.00	1.00			1:00				98.0	1.00	0.85	
1797 3430 3434 1565 1805 1615 1616	Fit Protected	0.95	1.00			1.00				1.00	0.95	1.00	
100 0.31 0.00 0	Satd. Flow (prot)	1797	3430			3434				1565	1805	1615	
He 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.8	Flt Permitted	0.31	1.00			1:00				1.00	0.95	1.00	
HF 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.8	Satd. Flow (perm)	284	3430			3434				1565	1805	1615	
ph) 34 994 17 0 892 6 0 0 23 91 0 0 7 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
ph) 0 1 1 0 0 0 0 0 21 0 57 ph) 34 1010 0 0 888 0 0 0 0 2 91 6 5 5 5 5 5 6 0 0 0 0 2 91 6 6 8 9 0 0 0 0 2 91 6 7 4	Adj. Flow (vph)	怒	984	17	0	892	9	0	0	23	91	0	62
ph) 34 1010 0 0 898 0 0 0 2 91 6 6 9 6 9 5 5 5 5 5 5 5 5 5 6 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RTOR Reduction (vph)	0	_	0	0	0	0	0	0	21	0	22	0
5 5 5 5 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6	Lane Group Flow (vph)	ਲ	1010	0	0	868	0	0	0	2	91	9	0
0% 5% 0% 6% 6% 6% 0%<	Confl. Peds. (#/hr)	2		2	2		2						
Ferm NA NA Perm Perm	Heavy Vehicles (%)	%0	2%	%0	%0	2%	2%	%0	%0	2%	%0	%0	%0
(s) 96.4 96.4 96.4 96.4 114 114 114 115 116 96.4 96.4 96.4 96.4 114 114 114 114 115 118 96.4 96.4 96.4 114 114 114 114 115 0.80 0.80 0.80 0.10 0.10 0.10 0.10 0.10	Turn Type	Perm	NA			AN				Perm	Perm	¥	
1, 0, 4 1, 2 1, 6 (1, 0) 6, 4 96, 4 96, 4 11, 4 11, 4 (1, 0) 6, 4 96, 4 96, 4 11, 4 11, 4 (1, 0) 6, 2 6, 3 6, 3 6, 3 (1, 0) 6, 2 6, 3 6, 3 6, 3 (1, 0) 7 7, 8 7, 8 (1, 0) 8, 8 7, 8 (1, 0) 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9,	Protected Phases		4			80						9	
(s) 964 964 964 114 114 114 8) 964 964 964 114 114 114 114 114 9) 964 964 964 114 114 114 114 964 964 964 964 964 114 114 114 114 114 964 964 964 964 964 964 114 114 114 114 964 964 964 964 964 964 964 964 964 96	Permitted Phases	4								2	9		
1,000 1,00	Actuated Green, G (s)	96.4	96.4			96.4				11.4	11.4	11.4	
0.80	Effective Green, g (s)	96.4	96.4			96.4				11.4	11.4	11.4	
Si	Actuated g/C Ratio	0.80	0.80			0.80				0.10	0.10	0.10	
S	Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
1	Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
Color Colo	Lane Grp Cap (vph)	469	2755			2758				148	171	153	
0.06 0.07 0.33 0.00	//s Ratio Prot		c0.29			0.26						0.00	
0.07 0.37 0.33 0.01 0.53 2.5 3.3 3.1 49.2 51.8 2.0 0.2 0.3 0.3 0.3 1.00 42. 0.2 0.3 0.3 0.3 0.0 3.2 1.7 2.0 5.4 49.3 54.9 A A A A A A A A A A A A A A A A A A Belay The Copacity ratio 0.38 gft (s) 120 Sum of lost time (s) 12.2 gft (s) 120 Sum of Service A I I I I I I I I I I I I I I I I I I	v/s Ratio Perm	90:0								0.00	c0.05		
25 3.3 3.1 49.2 51.8 0.62 0.52 1.63 1.00 1.00 1.7 2.0 5.4 49.3 54.9 A A A A A A A A A A A A B D Delay Try Try 1.7 2.0 5.4 49.3 54.9 A A A A A A A B D D Delay Try 1.7 2.0 5.4 49.3 54.9 5.4 49.3 64.9 Try Try Try Try Try Try Try Tr	//c Ratio	0.07	0.37			0.33				0.01	0.53	0.04	
1,00	Uniform Delay, d1	2.5	3.3			3.1				49.2	21.8	49.3	
March Marc	Progression Factor	0.62	0.52			1.63				1.00	1.00	1.00	
17 20 54 49.3 54.9 Service	ncremental Delay, d2	0.2	0.3			0.3				0.0	3.2	0.1	
A A A A A A A B D D D 2.0 5.4 49.3 D D A A A D D Belay 7.6 HOM 2000 Level of Service A B 17.0 Sum of lost time (s) 12.2 B Y Utilization 48.7% (CU Level of Service A B 15.0 Sum of lost time (s) 12.2 B 15.1 A B 16.1 B B 17.2 B B 17.2 B B 17.3 B B 17.4 B B 17.5 B B	Delay (s)	1.7	2.0			5.4				49.3	54.9	49.4	
2.0 5.4 49.3 A A D Delay 7.6 HCM 2000 Level of Service A Service	evel of Service	V	⋖			V				۵	۵	۵	
7.6 HCM 2000 Level of Service catio 0.38 arm of lost time (s) 120.0 Sum of lost time (s) 48.7% ICU Level of Service 15.00 Sum of lost time (s) 15.00 Sum of	Approach Delay (s)		2.0			5.4			49.3			52.7	
7.6 HCM 2000 Level of Service 0.38 120.0 Sum of lost time (s) 120.0 ** ICU Level of Service 15.7 ** 15.0 Level of Service 15.7 ** 15.0 Level of Service 15.0 ** 15.0 *	Approach LOS		∢			∢							
7.6 HCM 2000 Level of Service 0.38 Sum of lost time (s) ' 48.7% ICU Level of Service 15.01	Intersection Summary												
ratio 0.38 1.20.0 Sum of lost time (s) 1.20.0 Sum of lost time (s) 4.7% ICU Level of Service 1.5	HCM 2000 Control Delay			7.6	ゴ	CM 2000	Level of S	Service		4			
120.0 Sum of lost time (s) 18.7% ICU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.38									
48.7% ICU Level of Service 15	Actuated Cycle Length (s)			120.0	ೲ	um of lost	time (s)			12.2			
Analysis Period (min) 15	Intersection Capacity Utilizat	tion		48.7%	೦	U Level o	f Service			∢			
	Analysis Period (min)			15									

Critical Lane Group

With Kerr St Improvements BA Group - EFS

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

EBL EBT WBT 205 1255 615 205 1255 615 206 1255 615 2 6 6 6 0 38.0 38.0 38.0 12.0 47.6 47.6 25.0% 77.9% 52.9% 22.9 20 2.9 2.9 20 0.0 0.0 30 0.0 0.0 00 0.0 0.0 00 0.0 0.0 00 0.0 0.	3L SBR	KK K	5 245	5 245	ot Perm	4		4				2	.,		2.5 2.5	0.0 0.								ne None						art of Green
EBI. EBIT EBIT	WBT SBI	₩	615		NA Prot	9		9				2	.,					Lag						C-Min None	10.0	31.0	2			and 6:WBT, Sta
EBI 205 205 205 205 206 200 350 250% 290 4.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	EBT	‡	1255	1255	Y Y	2		2	38.0	47.6	109.0	%6.77	102.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2			2:EBTL
2 2 2	EBL	*	202	202	bm+pt	വ	2	2	0.9	12.0	35.0	25.0%	29.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None					Actuated Cycle Length: 140	nced to phase

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



With Kerr St Improvements BA Group - EFS

Future Total AM (Phase	Upper Kerr Village (8124-
Queues	6: Speers Road/Cornwall Road & Cross Avenue

Queues 6: Speers Road/Cornwall Road & Cross Avenue	nwall F	oad &	Cross	Avenu	er	Future Total AM (Phase 2) Upper Kert Village (8124-01)
	1	†	↓	٠	*	
Lane Group	EBL	B	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1476	748	9	288	
v/c Ratio	0.42	0.51	0.30	0.02	0.63	
Control Delay	4.4	4.0	7.3	9.09	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.4	4.0	7.3	9.09	12.9	
Queue Length 50th (m)	9.4	46.8	33.8	1.6	0.0	
Queue Length 95th (m)	14.5	22.7	44.0	2.2	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	723	2905	2501	324	202	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.51	0.30	0.02	0.41	
Intersection Summary						

Synchro 11 Report Page 15 With Kerr St Improvements BA Group - EFS

HCM Signalize 6: Speers Road

Future Total AM (Phase 2)	Upper Kerr Village (8124-01)	
ized Intersection Capacity Analysis	oad/Cornwall Road & Cross Avenue	

EBT 1255 1355 1355 1365 1360 1.00 1.00 1.00 3471 1.07 1476 0.85 1476 1476 1476 1476 1476 1476 1476 1476	WBT WBR WB	SBL 1900 1,0	SBR 245 245 245 245 1900 5.8 1.00 0.85 1.00 2608 2608 267 21 21 21 24 89% 99%	
ns			245 245 245 245 1900 0.88 1.00 0.85 1.00 0.85 2608 267 21 21 21 21 4	
(vph) 206 1755 100 1900 100 0.95 1100 0.95 1100 1.00 1100 1.0	6		245 245 1900 5.8 0.0.8 1.00 0.85 2608 267 267 21 21 24 9%	
(vph) 205 1255 100 1900 100 0.95 1.00 1.00 1.00 1.0	6		245 1900 5.8 0.88 0.85 1.00 2268 288 267 267 21 21 21 24 9%	
1900 1900 1900 1900 1900 1900 1900 1900	080		1900 5.8 0.88 1.00 1.00 1.00 2.85 2.85 2.87 2.1 2.1 2.1 4.4	
(vph) 6.0 6.6 6.0 6.6 6.0 6.6 6.0 6.6 6.0 6.6 6.0 6.6 6.0 6.0	080		5.8 0.88 1.00 0.85 1.00 0.85 2608 2.86 2.86 2.87 2.1 2.1 4 9%	
1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.93 3.71 0.33 1.00 0.85 0.85 0.85 0.85 0.85 0.85 0.90 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.8		0.88 1.00 0.85 1.00 0.85 1.00 2.608 2.87 2.67 2.1 2.9% 9%	
(vph) 0 1.07 (vph) 0 0.84 (vph) 0 1.07 (vph) 0 0 0.84 (vph) 0 0.84 (vp	9.0		1.00 0.85 2.808 2.808 2.808 2.808 2.87 2.1 2.1 2.4 9%	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	9.0		1.00 0.85 1.00 2608 1.00 2608 28 21 21 21 4 4	
(vph) 241 172 172 173 175 176 175 175 175 175 175 175 175 175 175 175	9.0		0.85 1.00 2608 1.00 0.85 287 21 21 21 9% 9%	
(vph) 241 172 172 172 173 168 136 170 170 170 170 170 170 170 170 170 170	0.8		100 2608 2608 0.85 267 21 27 29% 9%	
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(vph) 241 1476 (vph) 241 1472 (vph)	9.0		2608 0.85 286 267 21 21 9% Perm	
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	5.0	3.0	3.0	
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			c0.01	
0.42 0.51	0.30	0.04	0.11	
3.2	8.9	60.2	60.5	
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9.0	0.3	0.1	0.3	
3.4 3.9	7.1	60.3	60.7	
A	∢	ш	ш	
y (s) 3.8	7.1	2.09		
Approach LOS A	V	ш		
Intersection Summary				
lav	10.7	HCM 2000 L	HCM 2000 Level of Service	В
pacity ratio				
	140.0	Sum of lost time (s)		18.4
Intersection Capacity Utilization 69.3	69.2%	ICU Level of Service	Service	ပ
Analysis Period (min)	15			

With Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis
7: Kerr Street & Prince Charles Drive
Upper Kerr Village (8124-01)

Slop		\ <u>\</u>	† E	~ 8	M M	, Land	√ aw	√ ½	← ₩	◆ g	<u>*</u>	→ E	¥ 8
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266 384 989 833 266 0.04 0.04 0.07 1.1 3.7 0.1 14 19.1 15.9 0.2 1.6 C C A A A 19.1 15.9 0.2 1.6 C C C A A A 19.1 15.9 0.2 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6		9	8	9	9								
0.04 0.14 0.01 0.06 1.1 3.7 0.1 1.4 1.1 15.9 0.2 1.6 C C A A A 19.1 15.9 0.2 1.6 C C C 1.6 1.6 1.6 1.6 1.6 1.6 1.7 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6		268	384	686	833								
11 37 0.1 14 19.1 15.9 0.2 1.6 19.1 15.9 0.2 1.6 C C A A A 19.1 15.9 0.2 1.6 1.6 1.6 1.6 1.6 1.6 1.7 1.6 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7		0.04	0.14	0.01	90.0								
19.1 15.9 0.2 1.6 19.1 15.9 0.2 1.6 C C A A A A A A A A A A A A A A A A A A	Œ	-	3.7	0.1	1.4								
19.1 15.9 0.2 1.6 C C 1.6 1.6 57.8% ICU Level of Service		19.1	15.9	0.2	1.6								
19.1 15.9 0.2 1.6 C C C 1.6 57.6% IOU Level of Service		O	ပ	⋖	×								
1.6 57.8% IOU Level of Service		19.1	15.9	0.2	1.6								
1.6 57.8% ICU Level of Service 1.6		ပ	O										
1.6 57.6% ICU Level of Service	^												
57.6% ICU Level of Service				1.6									
	y Utilization			27.6%	⊴	J Level of	Service			ш			
	<u>-</u>			15									

With Kerr St Improvements

Synchro 11 Report

BA Group - EFS

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HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

	1	1	•	←	→	*	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	>			4	£		
Traffic Volume (veh/h)	20	10	2	525	360	30	
Future Volume (Veh/h)	20	10	2	525	360	30	
Sign Control	Stop			Free	Free		
Grade	%			%0	%0		
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	
Hourly flow rate (vph)	54	12	9	618	424	35	
Pedestrians	8			2			
Lane Width (m)	3.6			3.6			
Walking Speed (m/s)	7:			1.			
Percent Blockage	2			0			
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	0.89	0.92	0.92				
vC, conflicting volume	1092	466	479				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	\$	378	392				
tC, single (s)	6.4	6.2	4.1				
tC, 2 stage (s)							
LE (s)	3.5	3.3	2.2				
p0 queue free %	35	86	66				
cM capacity (veh/h)	293	909	1065				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	38	624	459				
Volume Left	24	9	0				
Volume Right	12	0	35				
SSH	354	1065	1700				
Volume to Capacity	0.10	0.01	0.27				
Queue Length 95th (m)	5.6	0.1	0.0				
Control Delay (s)	16.3	0.2	0.0				
Lane LOS	O	∢					
Approach Delay (s)	16.3	0.2	0.0				
Approach LOS	O						
Intersection Summary							
Average Delay			9.0				
Intersection Capacity Utilization	ion		43.2%	೨	ICU Level of Service	Service	A
Analysis Period (min)			15				

With Kerr St Improvements BA Group - EFS

Timings
Future Total AM (Phase 2)
9: Kerr Street & Stewart Street

9. Neil Sileel & Siewall Sileel	wallo	ממו							Opper Nerr Village (0124-01)
	1	†	-	ļ	•	←	۶	→	
Lane Group	EBL	BET	WBL	WBT	R	NBT	SBL	SBT	
Lane Configurations		4		4				4	
Traffic Volume (vph)	32	52	20	32	2	420	40	290	
Future Volume (vph)	32	52	20	32	2		40	290	
Turn Type	Perm	ΑΝ	Perm	ΑA	Perm	Ϋ́	pm+pt	ΑA	
Protected Phases		4		∞			~	9	
Permitted Phases	4		∞		2		9		
Detector Phase	4	4	∞	∞	2	2	~	9	
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
Minimum Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
Total Split (%)	40.0%	40.0%	40.0%	40.0%		46.7%	13.3%	%0.09	
Maximum Green (s)	24.6	24.6	24.6	24.6		29.6	7.0	39.6	
Yellow Time (s)	3.3	3.3	3.3	3.3		3.3	3.0	3.3	
All-Red Time (s)	2.1	2.1	2.1	2.1		2.1	0.0	2.1	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		5.4		5.4		5.4		5.4	
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	20	70	20	70	32	32		35	
Intersection Summary									
Cycle Length: 75									
Actuated Cycle Length: 75									
Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	and 6:SB7	L, Start o	of Green				
Natural Cycle: 75	The second								
Control I ype: Actuated-Coordinated	rainated								

Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street & Stewart Street

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Splits and Phases: 9: Kerr Street & Stewart Street

Splits and Phases: 9: Kerr Street &
With Kerr St Improvements

BA Group - EFS

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Queues

Queues

9: Kerr Street & Stewart Street

Upper Kerr Village (8124-01)

	†	ļ	—	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	79	152	542	440	
v/c Ratio	0.28	0.40	0.47	0.43	
Control Delay	23.8	14.2	9.6	9.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	23.8	14.2	9.6	9.5	
Queue Length 50th (m)	9.6	8.7	24.6	18.8	
Queue Length 95th (m)	15.4	16.8	61.6	49.6	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	429	229	1156	1032	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.17	0.27	0.47	0.43	
Intersection Summary					

With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

lase 2)	(8124-01)
AM (Phase 2)	(err Village
ota	Upper Kerr \
Future	

and Lost lune (spin) 35 25 5 20 36 70 5 400 40 280 30 and reflectionine (spin) 35 25 5 20 36 70 5 420 20 40 280 30 and reflectionine (spin) 35 25 25 20 36 70 5 420 20 40 280 30 and reflectionine (spin) 35 25 25 20 36 70 5 420 20 40 280 30 and reflectionine (spin) 1900 1900 1900 1900 1900 1900 1900 190	\ =	† 🛱	№ #	WBL	WBT	WBR	√ NB	− NBT	MBR N	≯ RE	→ SBT	SBR
25 5 20 38 70 5 420 20 40 290 100 1900 1	í	4	á		4		1	4	į	9	4	
1900 1900	LO	25	2	20	32	02	2	420	20	40	290	30
1900 1900	ıO	22	2	20	32	20	2	420	20	40	290	30
100	0	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00		5.4			5.4			100			2.4	
0.99 1.00 1.00 1.00 1.00 1.00 1.00 1.00		00.1			0.97			100			66.0	
0.99 0.99 0.92 0.99 0.99 0.99 0.99 0.99		0.99			1.00			1.00			1.00	
1701 1 (1912 1775 1777 1777 1777 1777 1777 1777 17		0.99			0.92			0.99			0.99	
1701 1612 1775 1727 1727 1727 1727 1728 1727 1728		0.97			0.99			1.00			0.99	
1388 1994 100 1138 1		1701			1612			1775			1727	
1388 1532 1769 1575 1388 1532 1769 1575 2 082 082 082 082 082 082 083 083 083 083 083 083 083 083 083 083		0.79			0.94			1.00			0.91	
0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82		1388			1532			1769			1575	
30 6 24 43 85 6 512 24 49 354 74 0 0 68 0 0 541 0 0 3 74 10 0 68 0 0 541 0 0 0 37 20 20 20 30 541 35 35 35 77 16% 0% 5% 4% 28% 6% 0% 2% 6% 152 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 152 152 152 49.0 65 60 153 152 49.0 65 60 154 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	۵.	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
5 0 0 68 0 0 1 0 0 33 74 0 0 84 0 0 54 0 0 437 20 20 20 30 35 35 35 35 2 0 2 0 0 0 0 4 NA Perm NA Perm NA Pm+pt NA 152 0 0 0 0 0 0 4 152 0 0 0 0 0 0 4 152 0 0 0 0 0 0 0 4 152 0 0 0 0 0 0 0 4 0 4 0 4 0 4 0 0 4 0 0 0 0 0 0 0 0 0 0 0		9	9	24	43	82	9	512	24	49	354	37
74 0 0 641 0 647 7% 16% 20 30 35 35 2 0 0 0 0 0 0 4 2 0 0 0 0 0 0 0 4 1 0 0 0 0 0 0 0 4 NA 0 0 0 0 0 0 0 4 NA 0 0 0 0 0 0 0 4 NA 0 0 0 0 0 0 0 4 NA 0 0 0 0 0 0 0 0 4 0		2	0	0	89	0	0	_	0	0	က	0
20 20 20 35<		74	0	0	æ	0	0	<u>¥</u>	0	0	437	0
7% 16% 0% 5% 4% 28% 6% 0% 2% 6% 10 0 0 0 0 0 0 4 15 0			20	20		20	ၕ		35	32		30
NA Perm NA Perm NA pm+pt NA Perm NA Perm NA pm+pt 152 152 49.0 6 153 152 49.0 6 154 54 54 54 4.0 0.05 0.05 0.05 54 54 54 54 54 54 54		%/	16%	%0	2%	4%	28%	%9	%0	5%	%9	%9
NA Perm NA Perm NA pm+pt 4 8 2 1 15.2 15.2 2 49.0 6 15.2 15.2 49.0 6 15.2 15.2 49.0 6 15.2 15.2 49.0 6 15.3 15.2 49.0 6 15.4 4.0 10.6 10.5 0.05 0.05 0.031 10.6 0.05 0.07 0.07 10.0 0.07 0.07 10.0 1.00 1.00 1.15 1.4 0.01 1.25 25.9 6.5 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0		2	0	0	2	0	0	0	0	0	4	0
8 8 2 2 1 8 152 49.0 152 49.0 152 49.0 152 49.0 152 49.0 165 6.2 174 5.4 170 1.00 17		Ν		Perm	NA		Perm	Ν		pm+pt	¥	
8 15.2 29.0 6 15.2 49.0 6.5 6.2 6.2 49.0 6.5 6.5 6.2 6.2 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5		4			∞			2		_	9	
152 49.0 4.0 15.2 49.0 4.0 15.2 49.0 6.5 5.4 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5				∞			2			9		
15.2 49.0 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5		15.2			15.2			49.0			49.0	
0.20 0.65 0.65 0.65 0.65 0.65 0.65 0.65 0.6		15.2			15.2			49.0			49.0	
5.4 5.4 4.0 4.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1		0.20			0.20			0.65			0.65	
108 HCM 2000 Level of Service B 65.5% ICU Level of Service C 65.5% ISB		5.4			5.4			5.4			5.4	
310 1155 c0.05 c0.31 0.27 0.47 25.9 C A 25.9 C A 10.8 HCM 2000 Level of Service B 0.44 10.8 C Sum of lost time (s) 66.5% CU Level of Service C 15		4.0			4.0			4.0			4.0	
25.2 0.31 25.2 0.47 25.2 0.47 25.2 0.47 25.9 7.9 25.9 7.9 25.9 7.9 26.4 A 75.0 Sum of lost time (s) 13.8 66.5% ICU Level of Service C 15		281			310			1155			1029	
0.27 0.31 0.27 0.47 2.52 6.5 1.00 1.00 1.06 1.4 2.5.9 7.9 C. A 2.5.9 7.9 C. A 2.5.9 7.9 C. A 7.0 Sum of lost time (s) 7.5.0 Sum of lost time (s) 1.3.8 66.5% ICU Level of Service 15												
0.27 0.47 C C C C C C C C C C C C C C C C C C C		0.02			c0.05			c0.31			0.28	
25.2 6.5 1.00 1.00 0.6 1.4 25.9 7.9 25.9 7.9 25.9 7.9 26.9 7.9 27.9 A 28.00 Evel of Service B 0.44 75.0 Sum of lost time (s) 13.8 66.5% ICU Level of Service C 15		0.26			0.27			0.47			0.42	
100 100 100 100 100 100 100 106 1.4 25.9 7.9 7.9 C A 25.9 7.9 7.9 C A A 10.8 HCM 2000 Level of Service B 66.5% ICU Level of Service C 15		25.2			25.2			6.5			6.2	
1.4 25.9 7.9 7.9 7.9 7.9 7.9 7.9 7.9 7.9 7.9 7		1.00			1.00			1.00			1.00	
25.9 7.9 C A 25.9 C A A 25.9 C A A A A A A A A A A A A A A A A A A A		0.7			9.0			4.			0.3	
25.9 A 25.9 7.9 C A 10.8 HCM 2000 Level of Service B 0.44 75.0 Sum of lost time (s) 13.8 66.5% ICU Level of Service C 15		25.9			25.9			7.9			6.5	
25.9 7.9 C A 10.8 HCM 2000 Level of Service B 0.44 Sum of lost time (s) 13.8 66.5% ICU Level of Service C		O			O			⋖			×	
C A 10.8 HCM 2000 Level of Service B 0.44 Sum of lost time (s) 13.8 66.5% ICU Level of Service C 75.0		25.9			25.9			7.9			6.5	
HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service		O			ပ			⋖			⋖	
HCM 2000 Level of Senice Sum of lost time (s) ICU Level of Senice												
Sum of lost time (s) ICU Level of Service	ı		10.8	 	3M 2000	Level of S	Service		В			
Sum of lost time (s) ICU Level of Service			0.44									
ICU Level of Service			75.0	જ	ım of lost	time (s)			13.8			
15			%2.99	೦	U Level o	f Service			O			
			15									

With Kerr St Improvements BA Group - EFS

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Timings 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

→	SBT	4413	1045	1045	₹	9		9		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0								1 04	sc	1 08
۶	SBL	5	150	150	Prot	_		-		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None												4	
←	NBT	4413	1385	1385	≨	2		2		20.0	41.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0										
•	NBL	r	110	110	pm+pt	2	2	2		7.0	12.0			12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0:0	None							Green				80	21s	→ 07
↓	WBT	₩	125	125	N A	œ		œ		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				r, Start of						
>	WBL	r	20	20	pm+pt	က	∞	က		7.0	12.0					2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SB			t Road			
†	EBT	₩	120	120	N A	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				2:NBTL			Wyecrof			
4	EBF	K	215	215	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							d to phase		linated	10: Dorval Road & Wyecroft Road	(R)		(0
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Splits and Phases: 10: Don	Ø31 ■ Ø3 (R)	42 s	◆ 05 (R)

With Kerr St Improvements BA Group - EFS

Queues
10: Dorval Road & Wyecroft Road
10: Dorval Road & Wyecroft Road

ane Group	→ ■	† E	WBL 💉	↑ WBT	№ PE	₩ NBT	→ BS 5	SBT	
	0.60	0.29	0.08	79.0	0.55	0.70	0.4	0.73	
	9.99	21.4	28.3	25.2	27.4	17.2	53.6	28.7	
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	9.99	21.4	28.3	25.2	27.4	17.2	53.6	28.7	
	27.0	11.9	3.6	18.3	9.8	97.6	18.8	105.3	
	40.0	24.5	9.0	32.5	m12.9	m142.9	28.7	146.5	
		155.6		199.3		494.4		672.1	
	115.0		145.0		65.0		125.0		
	416	934	361	1030	237	2258	382	2197	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	
	0.56	0.26	90:0	0.38	0.51	0.70	0.43	0.73	

m Volume for 95th percentile queue is metered by upstream signal.

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With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

Mocroment	Feb. Febr. Febr. Well Well Net Net		1	†	<u> </u>	/	Ļ	4	•	—	•	۶	→	*
March Marc	National Color	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
215 120 100 20 125 255 110 1385 60 150 1045 1900 1900 1900 1900 1900 1900 1900 190	150 100 20 125 235 110 1385 60 150 1045 150 150 150 125 235 110 1385 60 150 1045 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 150 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100 100 100 110 100 100	Lane Configurations	K.	₩		r	₽		r	4413		F	4413	
12 12 100 100 120 1385 60 150 1045 150 190 190 190 190 190 190 190 190 150 150 190 190 190 190 190 190 190 150 100 190 190 190 190 190 190 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 110 100 100 100 100 100 120 132 132 132 132 132 134 120 130 103 22 136 255 120 150 120 123 103 103 22 136 255 120 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 130 103 1318 136 136 120 130 103 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 1318 136 136 120 120 130 130 130 130 149 28.5 214 17.5 62.2 50.7 12.9 52.1 149 28.5 214 17.5 62.2 50.7 12.9 52.1 140 28.5 214 17.5 62.2 50.7 12.9 52.1 140 100 100 100 100 100 100 120 120 131 131 131 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 130 140 130 130 130 130 130 140 130 130 130 130 130 140 130 130 130 130 130 140 130 130 130 130 130 140 130 130 130 130 130 140 130 130 130	1500 1500 1200 1205 235 110 1385 60 1500	Traffic Volume (vph)	215	120	100	20	125	235	110	1385	09	150	1045	440
1900 1900	1500 1900 1000	Future Volume (vph)	215	120	100	20	125	235	110	1385	09	150	1045	440
50 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0	50 7.0 5.0 7.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0.99 1.00 0.99 1.00 1.09 1.00 1.09 1.00	1,00	Total Lost time (s)	5.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
1,00	1,00	Lane Ulli. racioi	9.0	0.90		9.0	0.90		9.0			100	0.0	
1,00 1,00	1,00 1,00	FIDD, DEU/DIRES	8.5	0.33		8.6	0.33		0.0	9.6		00.1	8.5	
132 373 373 1637 3128 1641 5036 3433 4676 3475 3773 3773 1637 3128 1641 5036 3433 4676 3475 3127 3079 1637 3128 1641 5036 3433 4676 3475 3127 3079 1637 3128 1636 3433 4676 3432 3475 347	137 3079 1637 3128 1641 5036 5035 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.92 0	ripo, peu/ores	8.6	00.0		8.6	000		8.0	00.0		8.6	80.0	
1127 3079 1637 3128 1641 5036 3433 4676 5036 5035 5036	3127 3079	Elt Drotoctod	00.0	100		00.0	100		00.0	100		90.0	0.30	
122 3127 3179 1039 3128 100 0.08 1.00 0.08 0.	12 12 10 10 10 10 10 10	Satd Flow (prot)	3127	3079		1637	3128		1641	5036		3433	4676	
117. 3079 1039 3128 136 5036 3433 4676 1039 3128 136 5036 3433 4676 1039 3128 136 5036 3433 4676 1039 3128 136 5036 3433 4676 1039 3128 136 5036	112 123 1039 1039 128 136 5036 3433 4676 1039 1039 128 136 5036 3433 4676 1039 1039 1039 128 136 5036 5036 5032 092	Fit Permitted	0.95	100		090	100		000	100		0.95	001	
F 092 092 092 092 092 092 092 092 092 092	F 092 092 092 092 092 092 092 092 092 092	Satd. Flow (perm)	3127	3079		1039	3128		136	5036		3433	4676	
126 136	134 130 109 22 136 255 120 1505 65 163 1136	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
h) 0 83 0 0 201 0 0 3 0 0 50 2 1 12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 10% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%	h) 0 83 0 0 201 0 0 3 0 0 50 24 156 0 22 190 0 120 1567 0 163 1564 12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 0 2 0 0 0 0 3 0 0 0 0 1 49 28 5 104 17.5 622 50.7 129 52.1 1 49 28 5 214 17.5 622 50.7 129 52.1 1 50 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	234	130	109	22	136	255	120	1505	92	163	1136	478
1,	h) 234 156 0 22 190 0 120 1567 0 163 1564 2 3 3 3 2 1 1 12% 7% 9% 10% 5% 2% 10% 2% 11% 2% 5% 10% 2% 2% 10% 2% 10% 2% 2% 10% 2% 2% 10% 2% 2% 10% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%	RTOR Reduction (vph)	0	83	0	0	201	0	0	က	0	0	20	0
12% 7% 9% 10% 5% 2% 10% 2% 10% 5% 10% 5% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 2% 10% 2% 2% 10% 2% 2% 2% 2% 2% 2% 2%	12% 7% 9% 10% 5% 2% 10% 2% 10% 5% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 2% 10% 2% 2% 10% 2% 2% 2% 2% 2% 2% 2%	Lane Group Flow (vph)	234	156	0	22	190	0	120	1567	0	163	1564	0
12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 14% 2% 2% 3	12% 7% 9% 10% 5% 2% 1% 2% 5% 0 2 0 <t< td=""><td>Confl. Peds. (#/hr)</td><td>2</td><td></td><td>က</td><td>က</td><td></td><td>2</td><td>-</td><td></td><td></td><td></td><td></td><td>_</td></t<>	Confl. Peds. (#/hr)	2		က	က		2	-					_
Prof. NA	Prof. NA Pun+pt NA Pun+pt NA Prof. NA Pro	Heavy Vehicles (%)	12%	%/	%6	10%	2%	2%	10%	2%	1%	2%	2%	%/
Prof. NA pmr-pt NA pmr-pt NA Prof. N	Prof. NA pm+pt NA pm+pt NA Prof. 7	Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
7 4 3 8 5 2 1 149 28.5 21.4 17.5 62.2 50.7 12.9 14.9 28.5 21.4 17.5 62.2 50.7 12.9 14.9 28.5 21.4 17.5 62.2 50.7 12.9 14.9 28.5 21.4 17.5 62.2 50.7 12.9 10.12 0.24 0.18 0.15 0.5 0.42 0.11 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 <td> 14.9</td> <td>Turn Type</td> <td>Prot</td> <td>ΑN</td> <td></td> <td>pm+pt</td> <td>¥</td> <td></td> <td>pm+pt</td> <td>¥</td> <td></td> <td>Prot</td> <td>NA</td> <td></td>	14.9	Turn Type	Prot	ΑN		pm+pt	¥		pm+pt	¥		Prot	NA	
14.9 28.5 28.5 27.4 77.5 62.2 50.7 12.9 14.9 28.5 21.4 77.5 62.2 50.7 12.9 0.12 0.24 0.18 0.15 0.52 0.42 0.11 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 0.5 0.00 0.06 0.05 0.31 0.05 0.00 6.0 0.7 0.05 0.00 0.06 0.05 0.31 0.05 0.00 6.0 0.7 0.05 0.01 0.01 0.42 0.58 0.04 6.0 0.8 0.01 0.01 0.42 0.58 0.04 6.0 0.8 0.01 0.01 0.01 0.02 0.05 6.0 0.8 0.01 0.01 0.01 0.02 0.05 6.0 0.8 0.01 0.01 0.01 0.02 0.05 7.0 0.00 0.00 0.00 0.00 0.00 8.0 0.3 0.3 0.3 0.3 1.3 0.5 1.3 0.5 9.0 0.3 0.3 0.3 1.3 0.5 1.3 0.5 9.0 0.3 0.3 0.3 1.3 0.5 9.0 0.3 0.3 0.3 0.3 0.3 0.3 10.0 0.00 0.00 0.00 0.00 10.0 0.00 0.00 0.00 0.00 10.0 0.00 0.00 0.00 0.00 10.0 0.00 0.00 0.00 0.00 0.00 10.0 0.00 0.00 0.00 0.00 0.00 0.00 0.0	14.9 28.5 2.4 17.5 62.2 50.7 12.9 14.9 28.5 21.4 17.5 62.2 50.7 12.9 0.12 0.24 0.18 0.15 0.52 0.42 0.11 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 8.0 7.1 1.0 4.2 5.0 5.0 5.0 9.0 1.0 1.0 1.0 1.0 1.2 5.0 1.1 1.8 5.0 9.0 1.0 1.0 1.0 1.0 1.2 5.0 1.1 1.8 5.0 9.0 1.0 1.0 1.0 1.0 1.0 1.2 1.3 5.0 9.0 1.0 1.0 1.0 1.0 1.0 1.2 1.3 5.0 9.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	Protected Phases	7	4		က	∞		2	2		_	9	
149 28.5	149 28.5	Permitted Phases				∞			2					
14.9 28.5 21.4 17.5 62.2 50.7 12.9 12.0 12.0 2.4 0.18 0.15 0.52 0.42 0.11 0.12 0.24 0.18 0.15 0.52 0.42 0.11 0.12 0.24 0.18 0.15 0.50 0.42 0.11 0.10 0.00 0.00 0.00 0.00 0.00 0.0	14.9 28.5 21.4 17.5 62.2 50.7 12.9 0.12 0.24 0.18 0.15 0.52 0.42 0.11 0.12 0.24 0.18 0.15 0.52 0.42 0.11 0.10 0.00 0.00 0.00 0.00 0.00 0.	Actuated Green, G (s)	14.9	28.5		21.4	17.5		62.2	20.2		12.9	52.1	
0.12 0.24 0.18 0.15 0.52 0.42 0.11 5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 3.88 731 204 456 214 2127 369 5 0.07 0.05 0.00 0.006 0.05 0.31 0.05 0.00 0.08 0.21 0.01 0.42 0.56 0.74 0.44 4.98 36.7 41.1 46.6 19.7 29.1 50.2 2 3.9 0.3 0.5 1.3 2.5 1.1 1.8 5.85.6 37.1 41.6 47.9 26.8 180 51.9 D D D D C B D C B D D A5.2 47.6 18.7 1.00 0.65 30.3 0.05 1.3 2.5 1.1 45.2 47.6 18.7 1.00 0.65 30.4 HCM 2000 Level of Service C C Dulization 1.20 Sum of lost time (s) 24.0 Unitization 1.20 Sum of lost time (s) 24.0	0.12 0.24 0.18 0.15 0.52 0.42 0.11 0.12 0.24 0.18 0.15 0.52 0.42 0.11 0.50 0.70 5.0 7.0 5.0 5.0 5.0 5.0 5.0 0.00 0.00 0.00 0.	Effective Green, g (s)	14.9	28.5		21.4	17.5		62.2	20.7		12.9	52.1	
5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 6.07 0.05 0.00 c.0.06 c.0.05 0.31 0.05 0.04 0.05 0.04 4.0	5.0 7.0 5.0 7.0 5.0 7.0 5.0 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 4.0 6.4 <td>Actuated g/C Ratio</td> <td>0.12</td> <td>0.24</td> <td></td> <td>0.18</td> <td>0.15</td> <td></td> <td>0.52</td> <td>0.42</td> <td></td> <td>0.11</td> <td>0.43</td> <td></td>	Actuated g/C Ratio	0.12	0.24		0.18	0.15		0.52	0.42		0.11	0.43	
Signature Sign	5.0 4.0 4.0 <td>Clearance Time (s)</td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td></td>	Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
388 731 204 456 214 2127 389 3	388 731 204 456 214 2127 389	Vehide Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
c007 005 000 c0.06 c0.05 031 0.05 c0.05 c0.07 c0.05 c0.05 c0.01 0.05 c0.05 c0.	c007 005 000 c006 c005 031 005 c00 c007 005 c007 005 c007 c0024 c008 c008 c008 c008 c008 c008 c008 c00	Lane Grp Cap (vph)	388	731		204	456		214	2127		369	2030	
0.002 0.021 0.002 0.024 0.024 0.024 0.042 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.024 0.027	0.60 0.21 0.02 0.04 0.24 0.04 49.8 36.7 0.11 0.42 0.56 0.74 0.04 1.00 1.00 1.00 1.00 1.24 0.58 1.00 2 3.9 0.3 0.5 1.3 2.5 1.1 1.8 5.3.6 37.1 41.6 47.9 2.68 18.0 51.9 D A5.2 47.6 7.8 18.7 D D D D D A5.2 47.6 47.6 18.7 D B D <td>v/s Ratio Prot</td> <td>c0.07</td> <td>0.05</td> <td></td> <td>0.00</td> <td>00:00</td> <td></td> <td>c0.05</td> <td>0.31</td> <td></td> <td>0.05</td> <td>00.33</td> <td></td>	v/s Ratio Prot	c0.07	0.05		0.00	00:00		c0.05	0.31		0.05	00.33	
0.66 0.21 0.11 0.42 0.56 0.74 0.44 49.8 36.7 4.11 46.6 19.7 29.1 50.2 29.2 29.1 50.2 29.2 29.2 29.2 29.2 29.2 29.2 29.2 2	0.66 0.21 0.11 0.42 0.56 0.74 0.44 49.8 36.7 41.1 46.6 19.7 29.1 50.2 2 3.9 0.3 0.5 1.3 2.5 1.1 1.8 5 5 37.1 41.6 47.9 26.8 180 51.9 D	√s Ratio Perm				0.02			0.24					
49.8 36.7 41.1 46.6 19.7 29.1 50.2 1.00 1.00 1.00 1.00 1.25 1.1 1.8 2.3 0.3 0.5 1.3 2.5 1.1 1.8 53.6 37.1 41.6 47.9 26.8 18.0 51.9 D D D D C B D D D D D C B D D O C B D D D D D D C B D D D D D C B D D D D D C B D D D D D C B D D D D D C B D D D D D C B D D D D D C B D D D D D C B D D D D D D C B D D D D D C B D D C B D D D D C B D D C C B D D D D C B D D C C B D D D D C B D D C C B D D C C B D D D D C B D D C C B D D C C B D D C C C C	49.8 36.7 41.1 46.6 19.7 29.1 50.2 1.00 1.00 1.00 1.04 0.58 1.00 2 3.9 37.1 41.6 47.9 26.8 18.0 51.9 D D D D C B D A5.2 47.6 18.7 D A6.2 47.6 18.7 N N N N N N N N N N N N	√c Ratio	09:0	0.21		0.11	0.42		0.56	0.74		0.44	0.77	
1.00 1.00 1.00 1.00 1.24 0.58 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 1.00 1.00 1.00 1.24 0.58 1.00 1.00 1.3 2.5 1.1 1.8 1.8 1.00 1.3 2.5 1.1 1.8 1.8 1.0 1.8 1.0 1.8 1.0 1.8 1.0 1.8 1.8 1.0 1.8 1.8 1.0 1.8 1.8 1.0 1.8 1.8 1.0 1.8 1.8 1.0 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8	Uniform Delay, d1	49.8	36.7		41.1	46.6		19.7	29.1		50.2	28.9	
2 3.9 0.3 0.5 1.3 2.5 1.1 1.8 1.8 1.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	2 3.9 0.3 0.5 1.3 2.5 1.1 1.8 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 1.1 1.8 2.5 2.5 1.1 1.8 2.5 2.5 1.1 1.8 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	Progression Factor	1.00	1.00		1.00	1.00		1.24	0.58		1.00	1.00	
S36 37.1	S36 37.1	Incremental Delay, d2	3.9	0.3		0.5	د .		2.5	[6 .	2.9	
D D D C B D D C B D D C B D D C D B D D C D D D D	D D D C B D D C B D D C B D D C B D D C D D C D D D D	Delay (s)	53.6	37.1		41.6	47.9		26.8	18.0		51.9	31.8	
45.2 47.6 18.7 V V Solar Solar HCM 2000 Level of Service C Cobascity ratio 0.65 Sum of lost time (s) 24.0 Utilization 7.3.7% ICU Level of Service D 15.0 Sum of lost time (s) 24.0 Utilization 7.3.7% ICU Level of Service D	45.2 47.6 18.7 V V A A A A A A A A A A A	Level of Service		Ω		□	Ω		O	ω			O	
y y y alay 30.4 HCM 2000 Level of Service Capacity ratio 1.50 Utilization 1.57 Capacity Sum of lost time (s) 1.57 Capacity Sum of lost time (s) 24.0 Utilization 1.57 1.57 1.50 Difficulties (s) Difficulties (s) 1.50 Difficulties (s)	V D B In State (Service) C C Capacity ratio 0.65 Sum of lost time (s) C In (s) 120.0 Sum of lost time (s) 24.0 Utilization 73.7% ICU Level of Service D In (s) 15 ICU Level of Service D	Approach Delay (s)		45.2			47.6			18.7			33.6	
9lay 30.4 HCM 2000 Level of Service Capacity ratio 0.65 Sum of lost time (s) ht (s) 73.7% ICU Level of Service 15.7% ICU Level of Service 15.7% ICU Level of Service 15.7%	HCM 2000 Level of Service 30.4 HCM 2000 Level of Service 0.65 120.0 Sum of lost time (s) 120.0 Sum of lost time (s) 137% ICU Level of Service 15 15 15 15 15 15 15 1	Approach LOS		۵			۵			В			O	
HCM 2000 Level of Service Capacity ratio 0.65 Capacity ratio 0.65 Capacity ratio 12.00 Sum of lost time (s) Utilization 73.7% ICU Level of Service 15.7% 1.00 Level of Service 15.00 15.	HCM 2000 Level of Service O.65	Intersection Summary												
0.65 120.0 Sum of lost time (s) Utilization 73.7% ICU Level of Service 15.0 Sum of lost time (s) 15.1 Service	Capacity ratio	HCM 2000 Control Delay			30.4	Ĭ	CM 2000	Level of	Service		U			
In (s) 120.0 Sum of lost time (s) Utilization 73.7% ICU Level of Service	th (s) 120.0 Sum of lost time (s) Utilization 73.7% ICU Level of Service 15	HCM 2000 Volume to Capa	city ratio		0.65									
Utilization 73.7% 15	Utilization 73.7% 15	Actuated Cycle Length (s)			120.0	ઝ	um of lost	time (s)			24.0			
15	15	Intersection Capacity Utiliza	ıtion		73.7%	೨	U Level o	of Service			۵			
	a	Analysis Period (min)			15									

With Kerr Stimprovements BA Group - EFS

Future Total AM (Phase 2) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 11: Speers Road & Interim Connection

																																								A	
																											SB 2	38	0	88	910	0.04	1:0	9.1	×						
•	SBR	¥C.	32	32			0.92	89									98.0	427			54	6.9		3.3	96	910	SB 1	0	0	0	1700	0.11	0.0	0.0	∢	9.1	A			f Service	
۶	SBL	<u>, -</u>	0	0	Stop	%0	0.92	0									06:0	1368	838	230	800	9.9	2.8	3.5	100	426	WB2	307	0	æ	1700	0.18	0.0	0.0						ICU Level of Service	
1	WBR		8	30			0.92	33																			WB1	547	0	0	1700	0.32	0.0	0.0		0.0				S	
ţ	WBT	₩.	755	755	Free	%0	0.92	821						TWLTL	2	169											EB3	530	0	0	1700	0.31	0.0	0.0					0.2	31.8%	15
†	EBT	‡	975	975	Free	%0	0.92	1060						TWLTL TWLTL	2	99											EB2	530	0	0	1700	0.31	0.0	0.0							
1	EBF	<u>,-</u>	0	0			0.92	0									0.86	854			518	4.1		2.2	100	915	EB 1	0	0	0	1700	0.00	0.0	0.0		0.0				uo	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Synchro 11 Report Page 25 With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Upper Kerr Village (8124-01) Timings 14: Kerr Street & Rail Track

ane Groun	— NRT	→ NS	24	
l ane Configurations	*	*	2	
Traffic Volume (vph)	515	510		
Future Volume (vph)	515	510		
Turn Type	Ϋ́	Ϋ́		
Protected Phases	2	9	4	
Permitted Phases				
Detector Phase	2	9		
Switch Phase				
Minimum Initial (s)	2.0	2.0	5.0	
Minimum Split (s)	22.0	22.0	22.0	
Total Split (s)	140.0	140.0	40.0	
Total Split (%)	%8.77	%8.77	25%	
Maximum Green (s)	138.0	138.0	38.0	
Yellow Time (s)	2.0	2.0	2.0	
All-Red Time (s)	0.0	0.0	0.0	
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	2.0	2.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	
Recall Mode	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	
Intersection Summary				
Cycle Length: 180				
Actuated Cycle Length: 180				
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	phase 2:1	VBT and (S:SBT, S	tart of Green
Natural Cycle: 45				
Control Type: Pretimed				

104 Splits and Phases: 14: Kerr Street & Rail Track Ø2 (R) ▼ Ø6 (R)

With Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Oueues

Quenes			Future Total AIM (Phase 2)
14: Kerr Street & Rail Track	ail Traci	>	Upper Kerr Village (8124-01)
	•	_	
	_	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	260	554	
v/c Ratio	0.39	0.39	
Control Delay	7.9	7.9	
Queue Delay	54.7	0:0	
Total Delay	62.6	7.9	
Queue Length 50th (m)	2.09	60.3	
Queue Length 95th (m)	77.5	77.1	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1414	
Starvation Cap Reductn	921	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.14	0.39	
Intersection Summary			

Synchro 11 Report Page 27 With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

	1	†	1	\	ļ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	515	0	0	510	0
Future Volume (vph)	0	0	0	0	0	0	0	515	0	0	510	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			2.0	
Lane Util. Factor								1.00			1.00	
Fr								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1881			1845	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	260	0	0	554	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	260	0	0	224	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	3%	%0
Turn Type								¥			AN	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1414	
v/s Ratio Prot								0.30			00.30	
v/s Ratio Perm												
v/c Ratio								0.39			0.39	
Uniform Delay, d1								0.7			7.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.8			0.8	
Delay (s)								7.8			7.8	
Level of Service								⋖			⋖	
Approach Delay (s)		0.0			0.0			7.8			7.8	
Approach LOS		∢			∢			⋖			∢	
Intersection Summary												
HCM 2000 Control Delay			7.8		:M 2000 I	HCM 2000 Level of Service	ervice		⋖			
HCM 2000 Volume to Capacity ratio	city ratio		0.31									
Actuated Cycle Length (s)			180.0	Su	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	tion		30.4%	⊴	ICU Level of Service	f Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

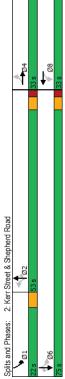
Future Total PM (Phase 2) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

	4	>	•	←	→	•		
Novement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	r	*-	F	\$	₽			
raffic Volume (veh/h)	52	140	125	615	520	110		
Future Volume (Veh/h)	22	140	125	615	520	110		
Sign Control	Stop			Free	Free			
Grade	%0			%0	%0			
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Hourly flow rate (vph)	27	151	73	661	228	118		
Pedestrians	2							
.ane Width (m)	3.6							
Walking Speed (m/s)	[
Percent Blockage	0							
Right tum flare (veh)								
Median type				None	None			
Median storage veh)								
Jpstream signal (m)								
X, platoon unblocked								
C, conflicting volume	1222	344	682					
C1, stage 1 conf vol								
/C2, stage 2 conf vol								
'Cu, unblocked vol	1222	344	682					
C, single (s)	8.9	7.0	4.2					
C, 2 stage (s)								
F (s)	3.5	3.3	2.3					
on due ue free %	85	11	82					
cM capacity (veh/h)	148	644	876					
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2	
/olume Total	27	151	134	330	330	373	304	
/olume Left	27	0	134	0	0	0	0	
/olume Right	0	151	0	0	0	0	118	
SSH	148	644	876	1700	1700	1700	1700	
Volume to Capacity	0.18	0.23	0.15	0.19	0.19	0.22	0.18	
Queue Length 95th (m)	4.9	6.9	4.1	0.0	0.0	0.0	0.0	
Control Delay (s)	34.8	12.3	8.6	0.0	0.0	0.0	0.0	
ane LOS	□	ш	⋖					
Approach Delay (s)	15.7		1.7			0.0		
proach LOS	ပ							
ntersection Summary								
Average Delay			2.5					
ntersection Capacity Utilization			38.2%	ਹ	ICU Level of Service	Service	A	
Analysis Period (min)			15					

Synchro 11 Report Page 1 With Kerr St Improvements BA Group - EFS

Timings 2: Kerr Street & Shepherd Road

	Ø4					4				5.0	22.0	33.0	31%	29.0	3.0	1.0					3.0	3.0	0.0	0.0	None	7.0	11.0	0				
•	SBT	‡	470	470	¥	9		9		18.0	28.2	75.0	69.4%	8.69	3.3	1.9	0.0						0.0		<u>u</u>	10.0	13.0	2				
*	SBL	×	155	155	pm+pt	Ψ-	9	Ψ.		7.0	11.0	22.0	20.4%	18.0	4.0	0.0	0.0	4.0	Lead	Yes	2.5	3.0	0.0	0.0	None							
•	NBR	*	110	110	Perm		2	2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Ε	10.0	13.0	2				
_	NBT	‡	545	545	Ϋ́	2		2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Min	10.0	13.0	2				
ļ	WBT	£,	0	0	Ϋ́	∞		œ		5.0	22.0	33.0	30.6%	29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0				
-	WBL	#	105	105	Perm		∞	∞		5.0	22.0	33.0									3.0	3.0	0.0	0.0	None	7.0	11.0	0			4:	
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 108	Actuated Cycle Length: 49.4	Natural Cycle: 65



With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Quenes

2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
	-	Ļ	—	•	٠	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	108	149	562	113	160	485	
v/c Ratio	0.42	0.23	0.41	0.17	0.27	0.22	
Control Delay	23.5	0.8	12.8	3.7	5.1	4.7	
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.1	
Total Delay	23.5	8.0	12.8	3.7	5.4	4.8	
Queue Length 50th (m)	8.0	0:0	17.3	0.0	4.2	7.7	
Queue Length 95th (m)	21.6	0.0	33.5	9.7	11.5	16.1	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	790	1084	3374	1467	847	3574	
Starvation Cap Reductn	0	0	0	0	338	1608	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.14	0.17	0.08	0.31	0.25	
Intersection Summary							

Synchro 11 Report Page 3

With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

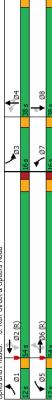
		Ť	/-	•	,	/	•	-	L	٨	+	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	je.	£		r	£3		r	*	*	<u>r</u>	*	*
Traffic Volume (vph)	0	0	0	105	.0	145	0	545	110	155	470	0
Future Volume (vph)	0	0	0	105	0	145	0	545	110	155	470	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
Frpb, ped/bikes				1.00	0.97			1.00	0.97	1.00	9.	
Flpb, ped/bikes				0.98	1.00			1.00	1.00	0.0	0.1	
T-1				00.1	0.85			00.1	0.85	9.5	9.5	
Fit Protected				0.95	00.1			00.1	00.1	0.90	00.1	
Satd. Flow (prot)				1/16	1538			3539	1543	1804	35/4	
Fit Permitted				0.76	1.00			1.00	3.5	0.35	0.1	
Satd. Flow (perm)				1368	1538			3539	1543	999	3574	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	108	0	149	0	295	113	160	485	0
RTOR Reduction (vph)	0	0	0	0	120	0	0	0	69	0	0	0
Lane Group Flow (vph)	0	0	0	108	59	0	0	295	44	160	485	0
Confl. Peds. (#/hr)	2		15	15		2			5	2		
Heavy Vehicles (%)	%0	%0	%0	3%	%0	1%	%0	1%	2%	%0	1%	%0
Bus Blockages (#/hr)	0	0	0	0	က	0	0	2	0	0	0	0
Turn Type	Perm			Perm	₹		Perm	≨	Perm	pm+pt	ΑN	Pem
Protected Phases		4			∞			2		τ-	9	
Permitted Phases	4			80			2		2	9		9
Actuated Green, G (s)				9.2	9.5			19.1	19.1	30.7	30.7	
Effective Green, g (s)				9.2	9.2			19.1	19.1	30.7	30.7	
Actuated g/C Ratio				0.19	0.19			0.39	0.39	0.62	0.62	
Clearance Time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Vehicle Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
Lane Grp Cap (vph)				263	295			1368	969	588	2221	
v/s Ratio Prot					0.02			00.16		90.09	0.14	
v/s Ratio Perm				c0.08					0.03	0.13		
v/c Ratio				0.41	0.10			0.41	0.07	0.27	0.22	
Uniform Delay, d1				17.5	16.4			11.0	9.6	4.2	4.	
Progression Factor				1.00	1.00			1.00	1.00	1.00	1.00	
Incremental Delay, d2				1.0	0.1			0.2	0.1	0.2	0.1	
Delay (s)				18.5	16.6			11.3	9.6	4.4	4.2	
Level of Service				ш	ш			ш	⋖	¥	⋖	
Approach Delay (s)		0.0			17.4			11.0			4.2	
Approach LOS		⋖			В			В			⋖	
Intersection Summary												
HCM 2000 Control Delay			9.3	ľ	M 2000	HCM 2000 Level of Service	Service		⋖			
HCM 2000 Volume to Capacity ratio	city ratio		0.39									
Actuated Cycle Length (s)			49.4	Su	Sum of lost time (s)	time (s)			13.2			
Intersection Capacity Utilization	tion		54.9%	<u></u>	U Level o	ICU Level of Service			∢			
Analysis Period (min)			15									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Upper Kert Village (8124-01) Timings 3: Kerr Street & Speers Road

*	SBR	*	100	100	Perm		∞	00		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	35						
→	SBT	*	250	250	≨	80		∞		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	35						
۶	SBL	F	260	260	Prot	က		က		7.0	10.0	16.0	13.3%	13.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None									
•	NBR	¥C	235	235	Perm		4	4		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	35						
←	NBT	*	160	160	Ν Α	4		4		10.0	34.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3	Lag	Yes	4.0	3.0	0.0	0.0	None	7.0	14.0	35						
•	NBL	je.	155	155	pm+pt	7	4	7		7.0	10.0	16.0	13.3%	13.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None									
4	WBR	*-	445	445	Perm		2	2		25.0	30.9	54.0	45.0%	48.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15						
ţ	WBT	‡	965	965	Ν Α	2		2		25.0	30.9	54.0	45.0%	48.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15				of Green		
-	WBL	je-	300	300	pm+pt	2	2	2		7.0	10.0	12.0	10.0%	9.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None							TL, Start		
<i>></i>	EBR	¥.	140	140	Perm		9	9		25.0	30.9	24.0	45.0%	48.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	C-Min	7.0	14.0	15				and 6:EB		
†	EBT	‡	610	610	Ϋ́	9		9		25.0	30.9	54.0	45.0%	48.1	3.7	2.2	0.0	5.9	Lag	Yes	5.5	3.0	0.0	0.0	Q-Min	7.0	14.0	15				2:WBTL		
1	EBL	<i>y-</i>	92	92	pm+pt	_	9	~		7.0	10.0	12.0	10.0%	9.0	3.0	0.0	0.0	3.0	Lead	Yes	2.5	3.0	0.0	0.0	None							to phase		dinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated

Splits and Phases: 3: Kerr Street & Speers Road



Synchro 11 Report Page 5 With Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 6

With Kerr St Improvements BA Group - EFS

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	1	†	1	/	ţ	4	•	•	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	100	642	147	316	1016	468	163	168	247	274	263	5
v/c Ratio	0.33	0.41	0.19	0.65	0.58	0.48	0.53	0.48	0.53	0.77	0.73	0.28
Control Delay	12.5	23.6	9.7	21.6	25.0	3.9	33.9	47.2	10.2	6.99	57.1	89
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	0.
Total Delay	12.5	23.6	9.7	21.6	25.0	3.9	33.9	47.2	10.2	6.99	57.1	89.
Queue Length 50th (m)	11.8	53.1	8.8	84.1	87.8	0.0	27.4	35.6	2.5	32.6	58.9	<u>ö</u>
Queue Length 95th (m)	26.0	94.4	20.0	0.89#	128.5	20.2	39.5	52.6	22.9	#47.8	9.08	13.4
Internal Link Dist (m)		138.4			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	323	1570	6//	484	1737	296	323	495	264	375	201	473
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.34	0.41	0 10	0.65	0.58	0.48	0.50	0.34	0.44	0.73	0.52	0 00

Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

	1	†	/	-	ţ	1	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	<u>~</u>	₩	*-	F	₩	W	F	+	*	1	+	R _
Traffic Volume (vph)	92	610	140	300	965	445	155	160	235	260	250	100
Future Volume (vph)	92	610	140	300	965	445	155	160	235	260	250	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
l otal Lost time (s)	3.0	0.5 2.5	5.5	3.0	0.5 A	S. C.	3.0	0.3	0.3	3.0	0.3	100
Frpb, ped/bikes	1.08	0.1	0.97	1.00	1.00	8.9	9.0	1.00	0.93	1.00	1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1:00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
T.	1.00	1.00	0.85	1.00	1:00	0.85	1:00	1.00	0.85	1.00	1.00	0.85
Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1803	3511	1560	1750	3539	1485	1770	1877	1486	3467	1900	1501
Fit Permitted	0.20	1.00	1.00	0.32	1:00	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	388	3511	1560	287	3539	1485	622	1877	1486	3467	1900	1501
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	100	642	147	316	1016	468	163	168	247	274	263	105
RTOR Reduction (vph)	0	0	8	0	0	238	0	0	191	0	0	82
Lane Group Flow (vph)	9	642	99	316	1016	230	163	168	26	274	263	50
Confl. Peds. (#/hr)	8		2	2		8	32		32	32		35
Heavy Vehicles (%)	%0	5%	%	%	5%	5%	%	%	%	%	%	%0
Bus Blockages (#/hr)	0	4	0	0	0	0	0	3	0	0	0	0
Turn Type	pm+pt	ΑN	Perm	pm+pt	ΑN	Perm	pm+pt	Α	Perm	Prot	≸	Perm
Protected Phases	-	9		2	2		7	4		က	00	
Permitted Phases	9		9	2		2	4		4			∞
Actuated Green, G (s)	61.9	53.7	53.7	70.1	58.9	58.9	34.2	22.3	22.3	12.4	22.8	22.8
Effective Green, g (s)	61.9	53.7	53.7	70.1	28.9	28.9	34.2	22.3	22.3	12.4	22.8	22.8
Actuated g/C Ratio	0.52	0.45	0.45	0.58	0.49	0.49	0.29	0.19	0.19	0.10	0.19	0.19
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	596	1571	869	472	1737	728	291	348	276	358	361	285
v/s Ratio Prot	0.05	0.18		c0.02	0.29		90:0	0.09		80.00	c0.14	
v/s Ratio Perm	0.12		0.04	c0.32		0.15	0.10		0.04			0.01
v/c Kato	\$.0 \$.0	0.41	0.03	0.67	0.58	0.32	0.56	0.48	0.20	0.77	0.73	0.07
Uniform Delay, d1	16.0	22.4	19.1	23.8	21.8 8. 6	18.4	5.45 5.50 5.00 5.00 5.00 5.00 5.00 5.00	43.7	5. 6	52.4	45.7	39.9
Progression Factor	0.83	08.0	7.47	3.5	3.5	3.5	3.5	3.5	0.1	0.0	1.00	00.1
Incremental Delay, dz	0.0	0.0 0.0	0.0	2.5	4. 0	- ç	0.2	4.1	C. C.	0.8	- 5	- c
Delay (s)	13.7	22.3	t. 74	0.7	23.3	U. U.	ي ي د.م	 	φ. Σ	4. I'd	23.3	40.0
Level of Service	m	ט ע	ם	m	2	m	2	J 2	۵	ш	O 9	ם
Approach Delay (s)		25.5			71.7			41.2			24.0 0.1	
Approach LOS		ပ			O			Ω			۵	
Intersection Summary												
HCM 2000 Control Delay			30.6	Í	HCM 2000 Level of Service	Level of	Service		ပ			
HCM 2000 Volume to Capacity ratio	city ratio		0.71									
Actuated Cyde Length (s)			120.0	Ō	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	tion		%0.62	<u>o</u>	ICU Level of Service	of Service						
Analysis Period (min)			3									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

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Timings 4: Dorval Road & Speers Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Lane Group Lane Group Lane Group Lane Configurations Lane Counfigurations Lane Counfigurations Lane Counfigurations Lane Maximum (vph) Lane Minimum Initial (sh) Minimum Initial (sh) Lotal Split (sh) Lotal Split (sh) Lotal Lost Time Adjust (sh) Lead Lag Lead Lead Lag Lead Lead Lag Lead Lead Lag Lead Lead Lead Lag Lead VBR NBL 525 65 525 65 110 110 110 100 110 110 110 110 110 110 110	NBT PR	SBL 290 290 290 290 290 290 290 290 290 290	SBT 720 720 720 NA 6 6 6 6 20.0 40.0 40.0% 41.0 41.0 41.0 41.0 41.0 41.0 3.0 0.0 0.0 0.0 7.0 7.0 7.0 7.0 7.0 7.0 7	SBR 375 375 375 Perm 6 6 6 6 6 6 40.0% 40.0% 41.0 41.0 4.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	
415 520 50 175 710 415 520 50 175 710 415 520 50 175 710 416 820 50 175 710 7 4 4 3 8 7 7 4 4 3 8 7 10.0 10.0 7.0 10.0 15.8% 36.7% 36.7% 14.2% 35.0% 15.0 15.8% 36.7% 36.7% 14.2% 35.0% 15.0 15.8% 36.7% 36.7% 14.2% 35.0% 15.0 10.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	6		290 290 290 11 11.0 11.0 15.0 3.0 3.0	720 720 720 NA 6 6 6 720.0 40.0 40.0% 41.0 41.0 41.0 3.0 3.0	375 375 375 Perm 6 6 6 6 6 40.0 40.0 40.0% 41.0 41.0 41.0 41.0 41.0 41.0 41.0 41.0
415 520 50 175 710 Prot NA Perm pm+pt NA Prot 175 710 7 4 4 3 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 9	md 6		290 290 290 11.0 11.0 15.0 15.0 15.0 15.0 10.0	720 720 NA	375 375 375 Perm 6 6 6 6 6 40.0 40.0 41.0 41.0 41.0 41.0 7.0
H15 520 50 175 710 Prod NA Perm pm+pt NA pm 7 4 4 8 8 7 4 4 8 8 8 7 7 10.0 10.0 7.0 10.0 11.0 42.0 42.0 11.0 42.0 115.0% 36.7% 14.2% 35.0% 15.1 15.8% 36.7% 36.7% 14.2% 35.0% 15.1 15.8% 36.7% 36.7% 14.2% 35.0% 15.1 10.3.0 37.0 37.0 33.0 35.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	E 6		290 11.0 11.0 11.0 11.0 15.0 15.0 15.0 10.0	720 NA 6 6 6 6 70.0 40.0 40.0 41.0 41.0 41.0 41.0 41.0 4	375 Perm 6 6 6 40.0 40.0 41.0 41.0 4.0 5.0 0.0 7.0
Prot NA Perm pm+pt NA print Prot NA print NA print NA 1 8 8 8 8 7 4 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9	<u>rd</u>		7.0 7.0 7.0 7.0 19.0 15.0 3.0 1.0 0.0 0.0	6 6 6 6 6 70 70 70 70 70 70 70 70 70 70 70 70 70	Perm 6 6 6 6 20.0 40.0 40.0% 41.0 42.0 3.0 0.0 0.0 7.0
7 4 8 8 8 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9	6	2 2 20.0 40.0 40.0 33.3% 1 33.0 4.0 3.0 5.0 0.0 0.0 0.0	7.0 7.0 7.0 19.0 15.0 3.0 1.0 0.0	6 6 6 20.0 40.0 40.0% 41.0 41.0 4.0 3.0 0.0 0.0 0.0 7.0 7.0 7.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6	6 6 6 70.0 40.0 40.0% 41.0 4.0 3.0 0.0 7.0
7 4 4 8 8 8 70 100 100 7.0 10.0 11.0 11.0 11.0 11.0	6 6	20.0 20.0 40.0 33.3% 1 33.0 4.0 3.0 0.0	6 7.0 7.0 7.0 11.0 15.0 3.0 1.0 0.0 0.0	6 40.0 40.0% 48.0 40.0% 41.0 4.0 3.0 0.0	20.0 20.0 40.0 40.0% 41.0 4.0 3.0 0.0 7.0
7 4 4 3 8 8 70 100 100 70 100 110 42.0 42.0 11.0 42.0 115.8% 36.7% 14.2% 35.0% 15.1 3.0 4.0 4.0 3.0 4.0 35.0 1.0 3.0 3.0 1.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	, t t o	20.0 20.0 40.0 33.3% 1 33.0 4.0 3.0 0.0	7.0 7.0 11.0 19.0 15.8 3.0 1.0	6 6 40.0 40.0 40.0 40.0% 41.0 4.0 3.0 0.0 7.0	20.0 20.0 40.0 40.0% 41.0 41.0 3.0 0.0 7.0
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110 42.0 42.0 11.0 42.0 11.0 42.0 44.0 11.0 42.0 44.0 17.0 42.0 15.8% 85.7% 14.2% 85.0% 145.8 35.0% 145.8 35.0% 145.0 37.0 37.0 37.0 13.0 35.0 4.0 1.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	6	40.0 40.0 33.3% 1 33.0 4.0 3.0 0.0	11.0 15.8 15.0 1.0 0.0	40.0 40.0% 41.0 41.0 3.0 0.0 7.0	40.0 40.0% 41.0 4.0 3.0 0.0 7.0
190 44.0 44.0 17.0 42.0 15.8% 36.7% 36.7% 14.2% 35.0% 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	6	33.3% 1 33.0 4.0 3.0 0.0	19.0 15.0 3.0 1.0 0.0	48.0 40.0% 41.0 4.0 3.0 0.0	48.0 40.0% 41.0 4.0 3.0 0.0 7.0
15.8% 36.7% 36.7% 14.2% 35.0% 15.1 (15.0 37.0 37.0 13.0 35.0 (17.0 37.0 13.0 35.0 (17.0 37.0 13.0 35.0 (17.0 37.0 13.0 35.0 (17.0 37.0 13.0 37.0 13.0 37.0 13.0 37.0 13.0 37.0 37.0 37.0 37.0 37.0 37.0 37.0 3	o	33.3% 1 33.0 4.0 3.0 0.0 7.0	15.8% 15.0 3.0 1.0 0.0	40.0% 41.0 4.0 3.0 0.0 7.0	40.0% 41.0 4.0 3.0 0.0 7.0
15.0 37.0 37.0 13.0 35.0 13.0 35.0 13.0 10.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		33.0 4.0 3.0 0.0 7.0	15.0	41.0 4.0 3.0 0.0 7.0	41.0 4.0 3.0 0.0 7.0
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1.0 3.0 3.0 1.0 3.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 1.0 1.0 1.0 0.0 1.0 1.0 1.0 1.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		3.0	0.0	3.0	3.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		0.0	0.0	0.0	0.0
4.0 7.0 7.0 4.0 7.0 Lead Lag Lead Lead Lead Lead Lead Lead Lead Lead		7.0		7.0	2.0
Lead Lag Lead Lag Lead Lag L Yes Yes Yes Yes 3.0 3.0 3.0 3.0 5.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 None None None None None None None None		?	4.0	?	5
Yes Yes Yes Yes Yes 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	_	Lag	Lead	Lag	Lag
30 5.0 5.0 3.0 5.0 3.0 3.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 None None None None None None None Sign 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0		Yes	Yes	Yes	Yes
30 30 30 30 30 30 30 30 30 30 30 30 30 3	3.0 3.0	2.0	3.0	2.0	2.0
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		3.0	3.0	3.0	3.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 None None None None None None None None	0.0 0.0	0:0	0.0	0.0	0.0
None None Nane Nane 170 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	0.0 0.0	0.0	0.0	0.0	0.0
7.0 7.0 28.0 28.0 5 5	ne None	C-Min	None	C-Min	C-Min
28.0 28.0 5 5		7.0		7.0	7.0
S.		26.0		26.0	26.0
Intersection Summary Ovcie Length: 120		2		2	2
Ovcle Lenath: 120					
Actuated Cycle Length: 120					
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green					
Natural Cycle: 115 Control Time: Actuated Coordinated					
E C					
Splits and Phases: 4: Dorval Road & Speers Road	-				
4	4				

07

Synchro 11 Report Page 8 With Kerr St Improvements BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

	•	†	*	>	ţ	4	•	←	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	451	565	72	190	772	571	71	788	315	783	408
v/c Ratio	0.99	0.52	0.09	0.49	0.79	0.77	0.26	0.83	0.95	0.59	0:20
Control Delay	92.1	36.2	0.3	38.6	63.5	31.1	21.3	49.5	74.7	16.1	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.1	36.2	0.3	38.6	63.5	31.1	21.3	49.5	74.7	16.1	2.5
Queue Length 50th (m)	~59.7	57.5	0.0	33.9	89.1	52.8	9.2	90.1	~47.1	62.5	4.6
Queue Length 95th (m)	#91.8	74.6	0.0	63.0	120.2	115.0	17.7	113.5	#118.8	31.2	4.1
Internal Link Dist (m)		412.3			472.1			621.6		494.4	
Turn Bay Length (m)	0.09		0.09	85.0		22.0	0.07		110.0		
Base Capacity (vph)	456	1106	583	336	1034	738	277	974	330	1319	813
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	66.0	0.51	0.09	0.48	0.75	0.77	0.26	0.81	0.95	0.59	0:20

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Movement EB EB EB WE WE WE WE WE		1	†	r	-	Ļ	1	•	—	•	۶	→	*
(vpi) 415 520 50 175 710 525 66 545 80 290 720 (vpi) 415 520 50 175 710 525 66 545 80 290 720 (vpi) 415 520 50 175 710 525 66 545 80 290 720 (vpi) 415 520 50 175 710 525 66 545 80 290 720 (vpi) 416 520 50 175 710 525 66 545 80 290 720 (vpi) 416 520 50 175 710 525 66 545 80 290 720 (vpi) 416 710 1900 1900 1900 1900 1900 1900 1900	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(vph) 415 520 50 175 710 525 65 645 80 290 720 (vph) 1900 1900 1900 1900 1900 1900 1900 190	Lane Configurations	K.	‡	*	r	‡	*	*	₽		r	*	¥.
(yph) 415 520 50 175 710 525 65 645 80 290 720 ph) 1900 1900 1900 1900 1900 1900 1900 190	Traffic Volume (vph)	415	520	20	175	710	525	65	645	80	290	720	375
(c) 1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	415	520	20	175	710	525	65	645	80	290	720	375
(g) 4.0 7.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 4.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
to the control of the	Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
1,00	Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
100 100 100 100 100 100 100 100 100 100	Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	1.00	1.00
1,00 0.85 1,00 0.98 1,00 0.98 1,00 0.99 0.92 0.93	Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
(#In) 0.95 1.00	Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
(†) 3433 3560 1556 1786 3546 1581 1805 3515 1787 3574 m) 3433 3560 1556 1786 5946 1581 1805 3515 1787 3574 m) 3433 3560 0120 0120 0120 1000 0131 1000 0131 1000 m) 3433 3560 0120 0120 0120 0120 0120 0120 0120 01	Fit Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1:00	1.00
0.95 1.00 1.00 0.37 1.00 0.31 1.00	Satd. Flow (prot)	3433	3560	1556	1786	3546	1581	1805	3515		1787	3574	1599
m) 3433 3560 1556 690 3546 1581 867 3515 235 3574 nr, PHF 0.92 0.9	Flt Permitted	0.95	1.00	1.00	0.37	1.00	1.00	0.31	1.00		0.13	1.00	1.00
γγγγγγγγγγγγγγγγγγγγγγγγγγγγγγγγγγγγ	Satd. Flow (perm)	3433	3560	1556	069	3546	1581	287	3515		235	3574	1599
Main color 451 565 54 190 772 571 701 87 315 783 Main color 451 565 54 190 772 571 701 87 315 783 Main color 451 565 174 176 1	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
class (%) 15 56 17 190 772 528 71 780 0 315 783 79 0 68 (%) 5 5 17 190 772 528 71 780 0 315 783 79 0 68 (%) 5 5 17 190 772 528 71 780 0 315 783 79 0 68 (%) 2 6 1 2 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	451	265	54	190	772	571	71	701	87	315	783	408
Flow (vph)	RTOR Reduction (vph)	0	0	37	0	0	43	0	∞	0	0	0	225
(#Inh) 5 5 5 5 1%<	Lane Group Flow (vph)	451	565	17	190	772	528	71	780	0	315	783	183
clas (%) 2% 1% <	Confl. Peds. (#/hr)	2		2	2		2						
Prof. NA Perm pm+pt NA pm+ov pm+pt NA pm+pt	Heavy Vehides (%)	5%	4%	5%	%	1%	7%	%0	%	1%	1%	%	%
Prod NA Perrod NA pm+pt NA pm-pt NA	Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
7 4 4 8 8 1 5 2 1 6 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6	Turn Type	Prot	A	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	Ν	Perm
15.9 36.9 36.9 44.8 8.2 5.2 5.0 5.2 436 15.9 36.9 36.9 44.8 32.9 50.0 37.7 32.1 53.2 43.6 15.9 36.9 36.9 44.8 32.9 50.0 37.7 32.1 53.2 43.6 4.0 7.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 7.0 4.0 7.0 4.0 7.0 7.0 4.4 1034 478 36.6 972 658 241 940 325 1298 5.0 5.0 5.0 3.0 5.0 3.0 5.0 5.0 34.2 5.0 5.0 3.0 5.0 5.0 34.2 5.0 5.0 3.0 5.0 5.0 34.2 5.0 5.0 3.0 5.0 5.0 34.2 5.0 5.0 3.0 5.0 5.0 34.2 5.0 5.0 5.0 5.0 34.2 5.0 5.0 5.0 5.0 35.0 37.7 32.8 1.6 6.0 1.0 1.0 1.7 1.4 1.04 1.00 1.00 7.0 1.0 1.0 1.7 1.4 1.04 1.00 1.00 7.0 1.0 1.0 1.0 1.0 1.0 8.9 C D E D C D F B 8.9 C D E D C D F 8.9 C D E D C D F 8.9 C D E D C D F 9.0 5.0 5.0 5.0 5.0 9.0 5.0 5.0 5.0 5.0 9.0 5.0 5.0 5.0 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.	Protected Phases	7	4		က	∞	_	2	2		-	9	
159 36.9 36.9 44.8 32.9 50.0 37.7 32.1 55.2 43.6 15.9 36.9 36.9 44.8 32.9 50.0 37.7 32.1 55.2 43.6 15.9 36.9 36.9 44.8 32.9 50.0 37.7 32.1 55.2 43.6 4.0 7.0 7.0 4.0 7.0 4.0 7.0 7.0 4.0 7.0 7.0 4.0 4.0 7.0 4.0 7.0 4.4 1094 47.8 36.6 97.2 63.8 30.5 5.0 3.0 5.0 4.5 1094 47.8 36.6 97.2 60.11 0.01 0.22 0.01 5.0 3.0 5.0 0.3 0.22 0.08 0.02 5.0 3.0 5.0 0.79 0.80 0.29 0.04 5.0 3.0 5.0 0.79 0.80 0.29 0.05 5.0 3.0 5.0 0.79 0.80 0.29 6.0 5.0 0.7 1.7 1.4 1.04 1.00 1.00 1.46 0.46 4.0 3.0 0.1 1.2 5.0 6.8 0.7 8.4 32.8 1.6 5.0 2.0 4.7 6.2.2 38.6 30.1 49.8 83.8 1.5 F	Permitted Phases			4	∞		∞	2			9		9
15,9 36,9 36,9 44,8 32,9 50,0 377 32,1 53,2 43,6 4,0	Actuated Green, G (s)	15.9	36.9	36.9	44.8	32.9	20.0	37.7	32.1		53.2	43.6	43.6
0.13 0.31 0.31 0.37 0.27 0.42 0.31 0.27 0.44 0.38 0.13 0.31 0.31 0.37 0.27 0.42 0.31 0.27 0.44 0.38 0.3 0 5.0 3.0 5.0 3.0 3.0 5.0 3.0 5.0 0.5 0.13 0.0 0.14 0.05 0.22 0.011 0.01 0.22 0.014 0.22 0.09 0.52 0.03 0.52 0.09 0.80 0.29 0.83 0.97 0.09 0.52 0.03 0.52 0.79 0.80 0.29 0.83 0.31 0.00 0.10 0.10 1.75 1.41 1.04 1.00 1.00 1.00 1.46 0.46 0.10 1.00 1.00 1.75 1.41 1.04 1.00 1.00 1.49 8.38 1.59 0.2 0.1 47.6 6.22 8.6 3.0 1.49 8.38 1.59 0.3 0.2 0.1 47.6 6.22 8.8 3.0 1.49 8.38 1.59 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	Effective Green, g (s)	15.9	36.9	36.9	44.8	32.9	20.0	37.7	32.1		53.2	43.6	43.6
4.0 7.0 7.0 4.0 7.0 4.0 4.0 7.0 4.0 7.0 4.0 7.0 3.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Ratio	0.13	0.31	0.31	0.37	0.27	0.42	0.31	0.27		0.4	0.36	0.36
3.0 5.0 5.0 3.0 3.0 5.0 3.0 5.0 454 1094 478 366 972 656 241 940 325 1298 60.13 60.16 0.05 0.22 0.06 0.02 0.014 0.22 60.99 652 0.03 0.52 0.79 0.80 0.29 0.83 0.97 0.60 50.0 34.2 2.91 26.5 40.4 30.7 29.5 41.4 32.8 31.1 1.00 1.00 1.00 1.75 1.41 1.04 1.00 1.00 1.46 0.46 40.3 0.8 0.1 1.2 5.0 6.8 0.7 8.4 3.5 1.6 50.9 2.3 35.0 29.1 47.6 62.2 38.6 30.1 49.8 83.8 15.9 F	Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
454 1094 478 366 972 658 241 940 325 1298 C0.13 C0.16 0.05 0.02 C0.11 0.01 0.22 C0.14 0.22 C0.13 C0.16 0.05 0.22 C0.11 0.01 0.22 C0.14 0.22 C0.29 0.52 0.03 0.52 0.79 0.80 0.29 0.83 0.97 0.80 S20 34.2 29.1 26.5 40.4 30.7 29.5 41.4 32.8 31.1 L00 1.00 1.00 1.75 1.41 1.04 1.00 1.00 1.46 0.46 40.3 0.8 0.1 1.2 5.0 E.8 0.7 8.4 35.8 15.9 F D C D E D C D F D C D F B S S S S S S S S S S S S S S S S S S	Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
0.013	Lane Grp Cap (vph)	454	1094	478	366	972	658	241	98		325	1298	280
0.99 0.52 0.01 0.14 0.22 0.08 0.029 0.029 0.052	v/s Ratio Prot	c0.13	c0.16		0.02	0.22	c0.11	0.01	0.22		00.14	0.22	
0.99 0.52 0.03 0.52 0.03 0.52 0.03 0.83 0.97 0.60 0.52 0.03 0.52 0.03 0.52 0.03 0.52 0.03 0.83 0.97 0.60 0.52 0.03 0.42 0.04 0.05 0.05 0.05 0.05 0.05 0.05 0.05	v/s Ratio Perm			0.01	0.14		0.22	0.08			00.29		0.11
52.0 34.2 29.1 26.5 40.4 30.7 29.5 41.4 32.8 31.1 1.00 1.00 1.00 1.75 1.41 1.04 1.00 1.00 1.46 0.46 40.3 0.8 0.1 1.2 5.0 6.8 0.7 8.4 35.8 16.9 2.3 35.0 29.1 47.6 62.2 38.6 30.1 49.8 83.8 15.9 F D C D E D C D F B S 8.9 15.9 51.6 D C D F B C D C D F B S 8.9 15.9 E D C D F B C D C D F B D C D C D F B D C D D F B D C D D F B D C D D F B D C D D C D D D D D D D D D D D D D D	v/c Ratio	0.99	0.52	0.03	0.52	0.79	0.80	0.29	0.83		0.97	09:0	0.31
1.00 1.00 1.75 14.1 1.04 1.00 1.00 1.46 0.46 0.46 0.40 0.00 1.00 1.75 1.41 1.04 1.00 1.00 1.46 0.46 0.46 0.40 0.00 1.00 1.00 1.45 0.46 0.46 0.40 0.00 1.00 1.00 1.00 1.00 1.00 1.00	Uniform Delay, d1	25.0	34.2	29.1	26.5	40.4	30.7	29.5	41.4		32.8	31.1	27.5
40.3 0.8 0.1 1.2 5.0 6.8 0.7 84 35.8 1.6 9.2 35.0 29.1 47.6 6.2 2 36.6 30.1 49.8 818 15.9 F D C D F D C D F S S S S S S S S S S S S S S S S S S	Progression Factor	9.	1.00	1.00	1.75	1.41	1.04	1.00	1.00		1.46	0.46	0.15
92.3 35.0 29.1 47.6 62.2 38.6 30.1 49.8 83.8 15.9 F D C D E D C D F B 58.9 51.6 48.2 27.2 E D C D C C 48.2 27.2 E D C D C C 48.2 27.2 C C 45.2 HCM 2000 Level of Service D 22.0 Sum of lost time (s) 22.0 22.0 sation 87.7% ICU Level of Service E	Incremental Delay, d2	40.3	0.8	0.1	1.2	2.0	89.	0.7	8.4		35.8	9.	
F	Delay (s)	92.3	32.0	29.1	47.6	62.2	38.6	30.1	49.8		83.8	15.9	5.3
58.9 51.6 48.2 E D D 45.2 HCM 2000 Level of Service D acity ratio 0.93 Sum of lost time (s) 22.0 zation 87.7% IOU Level of Service E	Level of Service	ш	□	ပ	□	ш	□	ပ	۵		ш	m	⋖
## A5.2 HCM 2000 Level of Service D	Approach Delay (s)		58.9			51.6			48.2			27.2	
45.2 HCM 2000 Level of Service 0.93 Sum of lost time (s) zation 87.7% ICU Level of Service 15	Approach LOS		Ш						Ω			O	
45.2 HCM 2000 Level of Service 0.93 0.93 120.0 Sum of lost time (s) zation 87.7% ICU Level of Service 15	Intersection Summary												
osacity ratio 0.93 120.0 Sum of lost time (s) zation 87.7% 15 ICU Level of Service 15 15	HCM 2000 Control Delay			45.2	Ì	CM 2000	Level of	Service		۵			
120.0 Sum of lost time (s) zation 87.7% IOU Level of Service 15	HCM 2000 Volume to Capac	city ratio		0.93									
Utilization 87.7% 15 Ip	Actuated Cycle Length (s)			120.0	ଊ	nm of los	t time (s)			22.0			
¢.	Intersection Capacity Utilizar	tion		87.7%	2	:U Level	of Service	0		ш			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

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rines section summine.

~ Volume exceeds capacity, queue is theoretically infinite.

~ Clueue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Timings Future Total PM (Phase 2) 5: St. Augustine Drive & Speers Road Upper Ker Village (8124-01)

5: St. Augustine Drive & Speers Road	ive & S	seers	Road				Upper Kerr Village (8124-01)
	1	†	ţ	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	*	₩	₩	*	<u>r</u>	, 2	
Traffic Volume (vph)	75	790	1145	52	20	0	
Future Volume (vph)	75	790	1145	52	20	0	
Turn Type	Perm	Ϋ́	ΑN	Perm	Perm	NA	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0	
Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%	
Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0:0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0:0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0:0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	C-Min	C-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	ed to phase	4:EBTL	and 8:WB	T, Start of	Green		
Natural Cycle: 60							
Control Type: Actuated-Coordinated	ordinated						

Splits and Phases: 5: St. Augustine Drive & Speers Road



With Kerr St Improvements

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 Queuess
 Future Total PM (Phase 2)

 5: St. Augustine Drive & Speers Road
 ★
 ★
 ★

 Lane Group
 EBI
 EBI
 WBT
 NBR
 SBI

 Lane Group Flow (vph)
 78
 849
 1214
 25
 36

 Wic Ratio
 0.22
 0.28
 0.40
 0.07
 0.39
 0.16

 Control Delay
 2.5
 1.5
 7.9
 0.4
 60.8
 1.4

 Control Delay
 2.5
 1.5
 7.9
 0.4
 60.8
 1.4

 Queue Delay
 2.5
 1.5
 7.9
 0.4
 60.8
 1.4

 Queue Length Soft (m)
 3.2
 12.8
 10.3
 0.0
 0.0

 Queue Length Soft (m)
 3.5
 30.2
 30.4
 60.8
 1.4

 Queue Length Soft (m)
 3.5
 30.2
 30.4
 60.8
 1.4

 Queue Length Soft (m)
 3.5
 30.2
 30.4
 4.8
 31.1
 37.9

 Turn Bay Length (m)
 3.6
 30.0
 0.0
 <td

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Future Total PM (Phase 2) Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

→	SBT SBR	١.	0 35		1900 1900	6.3	1.00	1.00	1.00	0.85	1.00	1615	1.00	960 960		34 0	7	%0 %0		9		7.7	7.7	90:0	6.3	3.0	103	0.00	0.00	52 G	1.00	0.1	52.7	D	55.2	ш						
<u>ب</u> •	R SBL		25 50		1900	.3 6.3	_					Ì	0.95		52 52			%0 %0	ď		2 6		7.7 7.7			3.0			00.03				.7 56.9	D E				A		.2	В	
<i>'</i> ↓	NBT NBR				1900 190	6.3	1.0	1.00	1.0	98.0	1.00	<u>\$</u>	1.00			0 24		%0	ه			7.	7.	0.06	9	m)	105		0.0	2.0	1.00	0	52		52.7	O				12.2		
•	NBL			0	1900									96 0		0 0		%0																				f Service		_	e	
<i>√</i> ⊥	WBT WBR		1145 20		1900 1900	5.9	3.95	1.00	00:1	1.00	1.00	563	1.00		1193 21			1% 0%		œ		100.1	100.1	0.83	5.9	3.0	2972	ちご	0.41	25	2.79	0.4	7.3	A	7.3	¥		HCM 2000 Level of Service		Sum of lost time (s)	evel of Servi	
•	WBL			0	1900		J		•		•	က		0 96 0		00		%0				1	7			•	7	ಶ										HCM		Sum	ICOL	
<i>></i>	r EBR				1900	_	10		0		0	_	0 -	900	5	0 0		ľ		_		_	_	<u></u>	0		O					~	_	_	10	<i>T</i>		7.3	0.41	120.0	25.7%	
_ † -	EBL EBT	۰	75 790			5.9 5.9		1.00 1.00			0.95 1.00		0.22 1.00			0 1		0% 1%		4	4		0.1 100.1		5.9 5.9		347 2962		0.00		0.55 0.56		2.2 1.4	A	 ;	H			.0.			
7	Movement	figurations			¥		_					rot)	Fit Permitted 0.	PHF	5		Confl Peds (#/hr)		ه	Protected Phases	Permitted Phases		s) 1			(6)	(hdv)	Vs Railo Prot		o d1		d2		Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

•	SBR	K.W.	420	420	Perm		4	4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							Green		
۶	SBL	je-	10	10	Prot	4		4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None							, Start of		
ļ	WBT	₩	1325	1325	Ž	9		9		38.0	47.6	85.0	%2.09	78.4	3.7	5.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				id 6:WBT		
†	EBT	‡	745	745	Ž	2		2		38.0	47.6	102.0	72.9%	95.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				:EBTL ar		
1	EBL	*	265	265	pm+pt	2	2	2		0.9	12.0	17.0	12.1%	11.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None						_	to phase 2		ordinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2)	Upper Kerr Village (8124-01)
Queues	6: Speers Road/Cornwall Road & Cross Avenue

o: Speers Road/Cornwall Road & Cross Avenue	IIWall				2	() o. 6
	•	†	ţ	۶	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	276	9//	1396	9	438	
v/c Ratio	0.64	0.27	29.0	0.02	0.80	
Control Delay	27.8	3.8	22.4	7.7	31.0	
Queue Delay	0.0	0.0	0.0	0.0	0:0	
Total Delay	27.8	3.8	22.4	<u>7.</u>	31.0	
Queue Length 50th (m)	33.4	21.8	128.8	5.6	21.9	
Queue Length 95th (m)	70.2	37.3	166.8	7.8	40.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	432	2920	2073	415	856	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.27	29.0	0.02	0.51	
Intersection Cummany						

Synchro 11 Report Page 15 With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Movement Lane Configurations Traffic Volume (ych) Ideal Flow (ych) Total Lost time (s) Total Lost time (s) Total Lost time (s) Flow Podbikes Flob, pedbikes	HH F	EBT	WBT	WBR	SBL	C C	
Lane Configurations Traffic Volume (vph) Fruture Volume (vph) Ideal Flow (vphpl) Total Lost fime (s) Lane Uit: Eactor Fipb, ped'bikes	<u>"</u>		ŀ			SBR	
Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphg) Total Lost time (s) Lane Util: Factor Frpb, ped'bikes Flpb, ped'bikes		‡	*		r	N/N	
Future Volume (vph) deal Flow (vphp) Total Lost time (s) Lane Util: Factor Frpb, ped/bikes	265	745	1325	15	10	420	
ideal Flow (vphpl) Total Lost time (s) Lane Util. Factor Frpb, ped/bikes	265	745	1325	15	10	420	
Total Lost time (s) Lane Util. Factor Frpb, ped/bikes	1900	1900	1900	1900	1900	1900	
Lane Util. Factor Frpb, ped/bikes Flpb, ped/bikes	0.9	9.9	9.9		2.8	2.8	
Frpb, ped/bikes Flpb, ped/bikes	1.00	0.95	0.95		1.00	0.88	
Flpb, ped/bikes	9.	1.00	1.00		1.00	1.00	
·	1.00	1.00	1.00		1.00	1.00	
±.	1.00	1.00	1.00		1.00	0.85	
	0.95	1.00	1.00		0.95	1.00	
ot)	1703	3610	3567		1805	2733	
FIt Permitted	0.10	1.00	1.00		0.95	1.00	
Satd. Flow (perm)	188	3610	3567		1805	2733	
Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	
Adj. Flow (vph)	276	9//	1380	16	10	438	
RTOR Reduction (vph)	0	0	0	0	0	266	
Lane Group Flow (vph)	276	9//	1396	0	9	172	
Confl. Peds. (#/hr)	2			2			
Heavy Vehides (%)	%9	%0	1%	%0	%0	4%	
	m+pt	NA	NA		Prot	Perm	
	2	5	9		4		
Permitted Phases	7					4	
	113.2	113.2	81.4		14.4	14.4	
s)	113.2	113.2	81.4		14.4	14.4	
Actuated g/C Ratio	0.81	0.81	0.58		0.10	0.10	
Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
Vehide Extension (s)	3.5	5.0	5.0		3.0	3.0	
(hdv)	431	2918	2073		185	281	
	c0.12	0.21	c0.39		0.01		
v/s Ratio Perm	0.40					90.00	
v/c Ratio	0.64	0.27	0.67		0.05	0.61	
Uniform Delay, d1	27.1	3.3	20.2		29.7	60.1	
Progression Factor	1.00	1.00	1.00		1:00	1.00	
Incremental Delay, d2	3.4	0.2	— —		0.1	3.9	
Delay (s)	30.5	3.5	21.9		9.99	64.1	
Level of Service	O	⋖	O		ш	ш	
Approach Delay (s)		10.6	21.9		63.9		
Approach LOS		ш	ပ		ш		
Intersection Summary							
HCM 2000 Control Delay			24.3	유	M 2000 I	HCM 2000 Level of Service	U
HCM 2000 Volume to Capacity ratio	atio		99.0				
Actuated Cycle Length (s)			140.0	Su	Sum of lost time (s)	time (s)	18.4
Intersection Capacity Utilization			75.5%	ਠ	ICU Level of Service	Service	Ω
Analysis Period (min)			15				

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Upper Kert Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

マ → ナ へ ←	. NBT NBR SBL SBT SBR	4	525 10 20 655 25 525 10 20 655 25	Free		0.95 0.95 0.95	553 11 21 689	S.	တ်က	7	0		None		238		594			67C					929													
•	NBL		n n	•		0.95	2									0.76	735		2	493	4.3		2.4	66	734													
4	WBR		8 8	3		0.95	32									0.93	294		5	970	6.2		3.3	8	200													
Ļ	WBT	4	0 0	Stop	%0	0.95	0	8	3.6		က					0.79	1376		4475	22	6.5	:	4.0	100	146													
\	WBL		5 5	2		0.95	7									0.79	1354		10.44	27	7.1		3.5	92	131	SB 1	736	21	56	929	0.02	0.5	9.0	∢	9.0			
~	EBR		6 6	2		0.95	7									0.76	722		110	4/0	6.2		3.3	88	442	NB 1	569	2	Ξ	734	0.01	0.2	0.2	∢	0.2			4.
†	EBT	4	0 0	Stop	%0	0.95	0	20	3.6	[-	2					0.79	1368		77.77	‡	7.0		4.5	100	120	WB 1	43	=	32	290	0.15	3.9	19.5	ပ	19.5	ی		
4	EBL		9 9	2		0.95	7									0.79	1370		74.45	140	7.1		3.5	9	122	EB 1	22	=	7	191	0.11	5.9	26.2	Ω	26.2	ם		
	Movement	Lane Configurations	Traffic Volume (veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vcu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Intersection Summary Average Delay

Synchro 11 Report Page 17 With Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Movement EB EBR NB NBT SBR		١	>	•	—	→	*	
tions	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
(verlyh) 15 10 5 220 615 40 (Verlyh) 15 10 5 520 615 40 pr 0% 0% 0% 0% 0% pr 0% 0% 0% 0% 0% pr 0% 0% 0% 0% 0% pr 11 5 547 647 42 pr 36 0.85 0.85 0.86 0.86 0.86 pr 3.6 0.80 0.80 0.80 0.80 0.80 0.80 pr 3.6 0.80 </td <td>Lane Configurations</td> <td>></td> <td></td> <td></td> <td>€</td> <td>£</td> <td></td> <td></td>	Lane Configurations	>			€	£		
(Veh/h) 15 10 5 520 615 40 (Veh/h) 16 11 5 520 615 40 (Veh) 16 11 5 547 647 42 (Veh) 16 11 5 547 647 42 3 6 0.95 0.95 0.95 0.95 3 8 0.80 0.80 0.80 (Veh) 1.1 (Veh) 0.85 0.80 0.80 (Veh) 1.20 0.80 (Veh) 1.20 0.00 (Veh) 1.20 0.00 (Veh) 2.3 4.2 4.3 (Veh) 2.3 4.2 4.4 (Veh) 2.3 4.2 6.8 (Veh) 2.3 0.2 0.0 (Veh) 2.3 0.2 0.0 (Veh) 3.5 0.2 0.0 (Veh) 4.5 0.0 (Veh) 1.1 0.2 0.0 (Veh) 1.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Traffic Volume (veh/h)	15	10	2	520	615	40	
Slop Free Free Free Free Free Free Free	Future Volume (Veh/h)	15	10	2	520	615	40	
(m/s) 1.1 5 547 647 42 (m/s) 1.1 5 547 647 42 3.6 (m/s) 1.1 (m/s) 1.2 (m/s) 1.3 (m/	Sign Control	Stop			Free	Free		
bor 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95	Grade	%0			%0	%0		
(mis) 16 11 5 547 647 42 35 36 (mis) 1.1 5 547 647 42 36 36 36 36 36 36 36 36 36 36 36 36 36	Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
1 1 1 1 1 1 1 1 1 1	Hourly flow rate (vph)	16	7	2	547	647	42	
(veh) 1.1 99	Pedestrians	35						
(m/s) 1.1 ge 3 (veh) None None None None None None (veh) 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 262 1 (3 264 2 (3 264 2 (3 264 2 (4 6.3 4.3 2 (4 6.3 4.3 4 (4 6.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4 (4 6.3 4.3 4	Lane Width (m)	3.6						
yee) yee ye	Walking Speed (m/s)	[-						
(veh) None None veh) 103 262 li (m) 103 262 locked 0.85 0.80 0.80 locked 703 724 ni vol 954 504 530 nif vol 964 504 530 kin frod 35 34 24 kin frod 33 4.3 99 kin frod 23 428 737 kin frod 23 428 737 11 6 0 42 552 689 689 689 11 5 0 42 551 10 0 42 12 10 0 10 13 10 0 10 13 10 0 10 13 10 0 10 14 10 10 10 15 10 10	Percent Blockage	က						
None None None None None None (10) 262 (10) 262 (10) 262 (10) 263 (10) 262 (10) 263	Right turn flare (veh)							
veh) (um) (olume 1260 703 724 infivol infivol infivol 6.4 6.3 4.3 infivol 7.7 5.2 6.8 infivol 7.8 6.8 infivol 7.9 6.8 infivol 8.0 0.0 infivol 9.0 0.0 infivol 18.7 0.2 0.0 infivol 18.8 0.0 infi	Median type				None	None		
(m) (m) (103 262 (104 miles) (104 miles) (105	Median storage veh)							
looked 0.85 0.80 0.80 louine 1260 703 724 mit vol	Upstream signal (m)				103	262		
1260 703 724 1260	pX, platoon unblocked	0.85	0.80	0.80				
nri vol Indivol Ind	vC, conflicting volume	1260	703	724				
nri vol 954 504 530 vol 6.4 6.3 4.3 1.5 3.4 2.4 % 93 97 99 hhh) 237 428 737 # EB1 NB1 SB1 16 5 0 11 0 42 coly 0.09 0.01 0.41 Sight (m) 2.3 0.2 0.0 coly (s) 18.7 0.2 0.0 mmary 15 0.2 0.0 mmary 16 6 70 A 18.7 0.2 0.0 mmary 17 0.2 0.0 mmary 18 6 70 A 45.0% ICU Level of Service	vC1, stage 1 conf vol							
val 954 504 530 (4 6.3 4.3 (5 6.3 4.3 (6 6.3 4.3 (7 6 6.3 (7 6 6.3 (7 6 6 (7 6 6 (8 6 6 (9 6 6 (9 6 6 (1 6 6 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7 7 (1 7	vC2, stage 2 conf vol							
6.4 6.3 4.3 % 35 3.4 2.4 % 93 97 99 h/h) 237 428 737 # EB 1 NB 1 SB 1 7 55 689 16 5 089 17 700 city 0.09 0.01 0.41 95h (%) 2.3 0.2 0.0 y (\$) 18.7 0.2 0.0 mmary 0.6 C mmary 6.4 6.7% ICU Level of Service (min) 15 7 6.5 15 7 6.5 16 7 6.5 17 7 6.5 18 7 0.2 0.0 18 7 0.2 0.0 18 7 0.2 0.0 18 7 0.2 0.0 18 7 0.2 0.0 18 7 0.2 0.0 18 7 0.5 0.0 18 7	vCu, unblocked vol	954	204	230				
## 15.5 3.4 2.4 ## 18.1 NB 1 SB 1 ## 27 552 689 ## 27 552 689 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 42 ## 1 10 1 0.4 ## 1 10 1 0.	tC, single (s)	6.4	6.3	4.3				
3.5 3.4 2.4 (http://dx.com/dx	tC, 2 stage (s)							
93 97 99 237 428 737 EB1 NB1 SB1 7 55 689 16 6 0 12 89 737 700 0.09 0.01 0.41 0.09 0.01 0.41 18.7 0.2 0.0 C A 18.7 0.2 0.0 18.7 0.2 1.0 18.7 0.2 1.0 18.7 0.2 1.0 18.7 0.2 1.0 18.7 0.2 1.0 18.7 0.2 1.0 18.7 0.2 1.0 18.7 0.2 1.0 19.9	F (s)	3.5	3.4	2.4				
EB 1 NB 1 SB 1 Z7 552 689 Z7 552 689 11 0 42 289 737 1700 0.09 0.01 0.41 (m) 2.3 0.2 0.0 C A 18.7 0.2 0.0 Ty 0.5 19.0 lilization 45.0% ICU Level of Service	p0 queue free %	ස	97	66				
EB1 NB1 SB1 27 552 689 16 5 0 11 0 42 289 737 1700 0.09 0.01 0.41 18.7 0.2 0.0 C A 18.7 0.2 0.0	cM capacity (veh/h)	237	428	737				
27 552 689 16 5 0 11 0 42 289 737 1700 0.09 0.01 0.41 2.3 0.2 0.0 C A 18.7 0.2 0.0	Direction, Lane #	EB 1	NB 1	SB 1				
16 5 0 11 0 42 289 737 1700 0.09 0.01 0.41 2.3 0.2 0.0 C A 2 18.7 0.2 0.0 C C A 18.7 0.2 0.0 C C A 18.7 0.2 0.0 C C A 18.7 0.2 1.0 C C A 18.7 0.2 1.0	Volume Total	27	552	689				
11 0 42 289 737 1700 0.09 0.01 0.41 2.3 0.2 0.0 18.7 0.2 0.0 C A A 18.7 0.2 0.0 C C 0.5 10.1 Level of Service	Volume Left	16	2	0				
289 737 1700 0.09 0.01 0.41 2.3 0.2 0.0 18.7 0.2 0.0 C A 18.7 0.2 0.0 C A 18.7 0.2 0.0 C A 18.7 0.2 1.0 C A 18.7 0.0 1.0 C A 18.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Volume Right	#	0	42				
0.09 0.01 0.41 2.3 0.2 0.0 18.7 0.2 0.0 C A 0.0 18.7 0.2 0.0 C A 0.0 C A 0.0 C A 18.7 0.2 0.0 C 1.5 ICU Level of Service	SSH	289	737	1700				
2.3 0.2 0.0 18.7 0.2 0.0 C A 0.0 C A 0.0 C 0.0 C 0.0 C 0.0 18.7 0.2 0.0 C 0.5 18.7 0.2 0.0 18.7 0.2 0.0 18.7 0.2 0.0	Volume to Capacity	0.09	0.01	0.41				
18.7 0.2 0.0 C A 18.7 0.2 0.0 C 0.5 0.5 15.0% ICU Level of Service	Queue Length 95th (m)	2.3	0.2	0.0				
C A 187 0.2 0.0 C 0.5 45,0% ICU Level of Service 15	Control Delay (s)	18.7	0.2	0.0				
18.7 0.2 0.0 C 0.5 45.0% ICU Level of Service 15	Lane LOS	ပ	∢					
0.5 45.0% ICU Level of Service 15	Approach Delay (s)	18.7	0.2	0.0				
0.5 45.0% ICU Level of Service 15	Approach LOS	O						
0.5 45.0% ICU Level of Service 15	Intersection Summary							
45.0% ICU Level of Service 15	Average Delay			0.5				
	Intersection Capacity Utiliza	ıtion		45.0%	೨	U Level o	Service	Ą
	Analysis Period (min)			15				

With Kerr St Improvements BA Group - EFS

Timings
Future Total PM (Phase 2)
9: Kerr Street & Stewart Street
Upper Kerr Village (8124-01)

	1	†	>	Ļ	•	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations		4		4		4		4	
Traffic Volume (vph)	20	9	9	12	9	400	22	202	
Future Volume (vph)	20	10	9	15	10	400	22	202	
Turn Type	Perm	Ϋ́	Perm	NA	Perm	NA	pm+pt	Α	
Protected Phases		4		00		2	_	9	
Permitted Phases	4		∞		2		9		
Detector Phase	4	4	∞	œ	5	2	~	9	
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
Minimum Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
Total Split (%)	40.0%	40.0%	40.0%	40.0%	46.7%	46.7%	13.3%	%0.09	
Maximum Green (s)	24.6	24.6	24.6	24.6	29.6	29.6	7.0	39.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.3	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		5.4		5.4		5.4		5.4	
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	20	20	70	70	32	32		32	
Intersection Summary									
Cycle Length: 75									
Actuated Cycle Length: 75									
Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	d to phase	2:NBTL	Ind 6:SB1	L, Start o	of Green				
Natural Cycle: 75									
Control Type: Actuated-Coordinated	rdinated								

Splits and Phases: 9. Kerr Street & Stewart Street

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With Kerr St Improvements
BA Group - EFS
Page 19

Queues
Queues
9: Kerr Street & Stewart Street
Upper Kerr Village (8124-01)

	†	ļ	←	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	8	109	462	663	
v/c Ratio	0.29	0.29	0.36	0.56	
Control Delay	21.6	10.0	8.0	11.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	8.0	11.0	
Queue Length 50th (m)	8.5	3.4	19.2	33.6	
Queue Length 95th (m)	16.5	13.0	56.9	102.4	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	44	225	1297	1192	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.36	0.56	
Information Cummons					
Intersection Summingry					

With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

## Control of the con		1	†	/	-	Ļ	4	•	←	4	۶	→	*
50 10 15 75 10 400 15 15 10 15 75 10 400 15 15 10 100 1900 1900 1900 1900 1900	Novement	BB	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50 10 15 10 40 15 50 10 15 10 40 15 50 10 15 10 40 15 100 190 190 100 15 10 100 100 100 100 10 10 0.99 1.00 0.96 1.00 100 100 100 0.97 0.99 1.00 </td <td>ane Configurations</td> <td></td> <td>4</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> <td>4</td> <td></td>	ane Configurations		4			4			4			4	
10	raffic Volume (vph)	20	9	15	9	15	75	10	400	15	22	202	20
1900 1900 1900 1900 1900 1900 1900 1900	uture Volume (vph)	20	10	15	10	15	75	9	400	15	22	202	20
1,00	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 1,00 1,00 1,00 1,00 1,00 1,00 1,00	otal Lost time (s)		5.4			5.4			5.4			5.4	
0.99 0.96 1.00 0.97 0.90 1.00 0.97 0.90 1.00 0.97 0.90 1.00 0.97 0.90 1.00 0.97 0.90 1.00 0.97 0.90 1.00 0.97 0.90 1.00 0.97 0.99 1.00 0.98 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.92 0.92 0.92 0.92 0.92 0.94 0.94 0.94 0.94 0.95 0.92 0.92 0.92 0.92 0.92 0.94 0.94 0.94 0.94 0.95 0.92 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.95 0.92 0.92 0.92 0.92 0.95 0.94 0.94 0.94 0.95 0.95 0.95 0.92 0.95 0	ane Util. Factor		1.00			1.00			1.00			1.00	
0.98 1.00 1.00 1.00 1.00 0.98 1.00 0.97 0.99 1.00 1.00 0.97 0.99 1.00 1.00 0.97 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 1.00 0.99 0.92 0.92 0.92 0.92 0.92 0.92 0	rpb, ped/bikes		0.99			96.0			1.00			0.99	
0.97 0.90 1.00 0.97 0.99 1.00 0.97 0.99 1.00 0.92 0.92 0.92 0.92 0.92 0.92 0.92 54 11 16 11 16 82 11 435 16 0 13 0 0 68 0 0 0 41 0 0 0 88 0 0 0 41 0 0 0 0 8 0 0 41 0 0 41 0 0 0 8 0 0 41 0 0 0 0 0 0 0 41 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	lpb, ped/bikes		0.98			1.00			1.00			1.00	
0.97 0.89 1.00 1323 1512 1516 1562 0.77 0.99 1.00 1323 0.92 0.92 0.92 0.92 0.92 24 13 0 0 0 41 0 0 461 0 2 0 0 0 41 0 0 48 0 0 1 0 2 0 0 0 41 0 0 461 0 2 0 0 0 41 0 0 461 0 2 0 0 0 41 0 0 461 0 2 0 0 0 41 0 0 461 0 2 0 0 0 2 0 0 2 0 0 25 0 0 0 0 0 41 0 0 0 461 0 2 0 0 0 0 0 1 1 17% 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0	Ţ.		0.97			0.0			1.00			0.99	
1562 1567 1568 1569 1569 1569 1569 1518	It Protected		0.97			0.99			1.00			1.00	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	satd. Flow (prot)		1661			1562			1856			1802	
1323 1518 1830 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	It Permitted		0.77			0.97			0.98			0.93	
0.32 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.9	atd. Flow (perm)		1323			1518			1830			1679	
54 11 16 11 14 435 16 0 68 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
0 13 0 0 68 0 0 1 0 0 20 0 80 0 0 41 0 0 0 20 0 80 0 0 41 0 0 0 461 0 0 20 0 0 0 0 0 0 0 0 0 2 0 0 0 2 0 0 0 0	dj. Flow (vph)	72	=	16	7	16	85	=	435	16	09	549	24
0 68 0 0 41 0 0 461 0 0 2 20 35 35 20 20 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	TOR Reduction (vph)	0	13	0	0	89	0	0	_	0	0	က	0
2% 20% 0% 15% 2% 3% 2.55 2	ane Group Flow (vph)	0	89	0	0	41	0	0	461	0	0	099	0
2% 20% 0% 13% 2% 0% 1% 17% 0 2 0 0 0 0 0 0 1 4 8 2 2 2 0 <t< td=""><td>Confl. Peds. (#/hr)</td><td>8</td><td></td><td>15</td><td>15</td><td></td><td>8</td><td>32</td><td></td><td>22</td><td>22</td><td></td><td>35</td></t<>	Confl. Peds. (#/hr)	8		15	15		8	32		22	22		35
Perm NA Perm NA Perm NA Pm+ 4 4 8 2 2 4 13.2 13.2 51.0 51.0 13.2 13.2 51.0 51.0 68 5.4 5.4 5.4 5.4 5.4 4.0 4.0 4.0 6.6 6.0 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 5.4 6.0 6.0 0.03 0.25 6.0 6.0 6.0 0.0 0.0 0.0 0.0 6.0 6.0 6.0 6.0 6.0 6.0 7.0 6.5 6.0 6.0 6.0 6.0 6.0 7.0 6.5 6.5 6.0 6.0 6.0 6.0 6.0 7.0 7.0 8.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	leavy Vehicles (%)	2%	20%	%0	%0	13%	5%	%0	1%	17%	1%	5%	%0
Perm NA Perm NA Perm NA 4 4 8 2 2 4 13.2 13.2 51.0 51.0 13.2 13.2 51.0 51.0 51.0 13.2 13.2 51.0 56.0 51.0 13.2 13.2 51.0 66.0 66.0 5.4 4.0 4.0 4.0 4.0 66.0 5.05 2.6 2.6 2.2 5.1 6.0	us Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	3	0
4 4 8 8 2 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	urn Type	Perm	NA		Perm	Ν		Perm	NA		pm+pt	¥	
4 8 8 2 51.0 13.2 13.2 51.0 13.2 13.2 51.0 0.18 0.18 0.68 5.4 5.4 5.4 5.4 4.0 4.0 4.0 4.0 2.32 267 1244 2.05 0.03 0.25 0.29 0.016 0.37 2.6 2.6 2.6 5.1 1.00 0.4 0.8 2.7 2.6 2.6 6.0 2.7 2.6 C C A A C C C A A C C C C C A A C C C C C A A C C C C C A A C C C C C C A A C C C C C C C A A C	rotected Phases		4			∞			2		-	9	
13.2 13.2 51.0 13.2 13.2 51.0 13.2 13.2 51.0 13.2 13.2 51.0 13.2 13.2 51.0 13.2 13.2 51.4 1.0 1.0 1.0 1.00 1.0 1.0 1.0 1.00 1.0 0.4 0.8 27.8 26.5 6.0 28.9 HCM 2000 Level of Service	ermitted Phases	4			œ			5			9		
13.2 13.2 51.0 13.4 6.14 6.14 6.16 23.2 267 12.44 20.05 0.03 0.25 20.05 0.03 0.25 20.05 0.03 0.25 20.05 0.04 0.37 20.08 26.2 5.1 1.00 0.4 0.8 27.8 26.5 6.0 C C C A A 27.8 26.5 6.0 C C C A A 27.8 26.5 6.0 A 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 A 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 C C C C A A 27.8 26.5 6.0 C C C C A A 27.8 C C C C A A 27.8 C C C C C A A 27.8 C C C C C C C C A A 27.8 C C C C C C C C C C C C C C C C C C C	ctuated Green, G (s)		13.2			13.2			21.0			21.0	
0.18 0.18 0.68 5.4 5.4 6.0 6.40 4.0 4.0 7.22 267 1.244 7.00 0.03 0.25 0.05 0.03 0.25 0.25 26.2 5.1 1.00 0.4 0.3 27.8 26.5 6.0 27	ffective Green, g (s)		13.2			13.2			21.0			21.0	
2.32 267 1.24 2.32 267 1.24 2.32 267 1.24 2.005 0.03 0.25 0.029 0.016 0.37 2.08 26.2 5.1 1.00 0.4 0.8 2.7.8 26.5 6.0 C C A C C A 2.7.8 26.5 6.0 C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C A C C C C	ctuated g/C Ratio		0.18			0.18			0.68			0.68	
4.0	learance Time (s)		5.4			5.4			5.4			5.4	
232 267 1244 c0.05 0.03 0.25 0.29 0.16 0.37 26.8 26.2 5.1 1.00 1.00 0.4 27.8 26.5 6.0 C C C A A 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 A 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 A 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 A 38.4 HCM 2000 Level of Service	ehicle Extension (s)		4.0			4.0			4.0			4.0	
C.0.05 0.03 0.25 0.29 0.16 0.37 26.8 26.2 5.1 1.00 1.00 1.00 1.0 0.4 0.8 27.8 26.5 6.0 C C C C C C C A C C C A A A Social ratio 0.54 HCM 2000 Level of Service C C C A A A Social ratio 0.54 Service C C A A A A Social ratio 0.54 Service C C A A A A Social ratio 0.54 Service C C A A A A Social ratio 0.54 Service C A A A Social ratio 0.54 Service C A A A C C C A A A A C C C A A A A C C C A A A A	ane Grp Cap (vph)		232			267			1244			1141	
20.05 0.03 0.25 0.29 0.016 0.25 0.29 0.016 0.37 26.8 26.2 5.1 1.00 0.4 0.8 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 28.9 HCM 2000 Level of Service	/s Ratio Prot												
20.29 0.16 0.37 20.8 26.2 5.1 20.8 26.2 5.1 20.0 1.00 1.00 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.8 26.5 6.0 27.9 C C A A 27.8 26.5 6.0 4 A 27.8 26.5 6.0 5 A 27.8 26.5 6.0 6 A 27.8 26.5 6.0 75.0 Sum of lost time (s) 22.1	/s Ratio Perm		c0.05			0.03			0.25			c0.39	
26.8 26.2 5.1 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.4 27.8 26.5 6.0 C C A A 27.8 26.5 6.0 C C A A C C C C	/c Ratio		0.29			0.16			0.37			0.58	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Jniform Delay, d1		26.8			26.2			5.1			6.3	
1.0 0.4 0.8 27.8 26.5 6.0 C C C C C 6.0 C C C 6.0 C C A A 28. HCM 2000 Level of Service C Sum of lost time (s) 28. CU Level of Service 1.50 Sum of lost time (s) 28. CU Level of Service	rogression Factor		1.00			1:00			1.00			1.00	
27.8 26.5 6.0 C C C A 27.8 26.5 6.0 C C A C C A C C A A A Sacity ratio 0.54 Pum of lost time (s) station 81.3% IOU Level of Service	ncremental Delay, d2		1.0			0.4			8.0			0.7	
C C C A 27.8 26.5 6.0 C C A C C A A 9.6 HCM 2000 Level of Service 75.0 Sum of lost time (s) ration 81.3% IOU Level of Service	Jelay (s)		27.8			26.5			0.9			7.0	
27.8 26.5 6.0 C C A A acity ratio 0.54 Schrice 75.0 Sum of lost time (s) 27.8 1.3% CU Level of Service 4.4 CU Level of Service	evel of Service		O			ပ			⋖			×	
C C C A A 8.6 HCM 2000 Level of Service 75.0 Sum of lost time (s) 24.3% CU Level of Service 1.5% CU Level of Service	opproach Delay (s)		27.8			26.5			0.9			7.0	
9.6 HCM 2000 Level of Service 0.54 Sum of lost time (s) 75.0 Sum of lost time (s) 74.3% (CU Level of Service 75.0 Sum of lost time (s) 75.0 Sum of l	pproach LOS		O			O			⋖			⋖	
9.6 HCM 2000 Level of Service 0.54 Sum of lost time (s) zation 81.3% ICU Level of Service	ntersection Summary												
254 0.54 7.50 Sum of lost time (s) 7.50 Sum of lost time (s) 8.1.3% IOU Level of Service 7.50 Sum of lost time (s) 7.50 Su	ICM 2000 Control Delay			9.6	ĭ	3M 2000 L	evel of S	ervice		⋖			
75.0 Sum of lost time (s) zation 81.3% ICU Level of Service	HCM 2000 Volume to Capa	acity ratio		0.54									
zation 81.3% ICU Level of Service	ctuated Cycle Length (s)			75.0	S	m of lost	ime (s)			13.8			
47	ntersection Capacity Utiliza	ation		81.3%	⊴	J Level of	Service			۵			
	Analysis Period (min)			15									

Synchro 11 Report Page 21 With Kerr St Improvements BA Group - EFS

Actuated Cyde Length (s) Intersection Capacity Utilization Analysis Period (min) c Critical Lane Group

Timings 10: Dorval Road & Wyecroft Road

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Future Lotal PM (Phase 2)	5
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Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations	K	₩	r	*	R.	r	4413	K	4413	
Traffic Volume (vph)	382	220	09	95	490	95	1345	130	1180	
Future Volume (vph)	382	220	9	92	490	92	1345	130	1180	
Turn Type	Prot	Ϋ́	pm+pt	Ä	hm+ov	pm+pt	₹	Prot	ΑN	
Protected Phases	7	4	က	∞	~	2	2	~	9	
Permitted Phases			∞		∞	7				
Detector Phase	7	4	က	œ	_	2	2	_	9	
Switch Phase										
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	
Minimum Split (s)	12.0	25.0	12.0	25.0	12.0	12.0	41.0	12.0	41.0	
Total Split (s)	21.0	40.0	21.0	40.0	17.0	17.0	45.0	17.0	45.0	
Total Split (%)	17.5%	33.3%	17.5%	33.3%	14.2%	14.2%	35.0%	14.2%	35.0%	
Maximum Green (s)	16.0	33.0	16.0	33.0	12.0	12.0	32.0	12.0	32.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.0	3.0	3.0	
Lost Time Adiust (e)	0.0	0.0	0.7	0.0	0.7	0.0	0.0	0.0	0.0	
Total Lost Time (s)	2.0	7.0	2.0	7.0	2.0	2.0	7.0	2.0	2.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	C-Min	None	C-Min	
Walk Time (s)		7.0		7.0			7.0		2.0	
Flash Dont Walk (s)		11.0		11.0			27.0		27.0	
Pedestrian Calls (#/hr)		0		0			0		0	
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	sed to phas	e 2:NBTI	and 6:SE	3T, Start	of Green					
Natural Cycle: 90	hodoniba									
Control Type: Actuated-Coordinated	ordinated									
Splits and Phases: 10: Do	10: Dorval Road & Wyecroft Road	& Wyear	oft Road							
001 001 000 000 000 000 000 000 000 000	Ø2 (R)				√ 03	9		1 0		
17 s 42 s					218		4	0.5		
→ 02 ·	06 (R)				1	2		8 4 •		
	44				0.10					

With Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

	4	†	\	↓	4	•	←	۶	→	
ane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	418	418	65	103	533	103	1505	141	1511	
/c Ratio	0.98	0.56	0.22	0.48	0.88	0.43	0.89	0.19	29.0	
ontrol Delay	90.1	30.6	30.2	22.8	45.0	14.8	39.9	39.4	28.0	
tueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	90.1	30.6	30.2	25.8	45.0	14.8	39.9	39.4	28.0	
Queue Length 50th (m)	51.2	30.0	10.9	23.0	91.0	7.9	136.7	13.8	96.5	
Jueue Length 95th (m)	#82.7	45.1	19.8	38.3	129.7	m11.2 m#162.4	#162.4	23.2	132.7	
nternal Link Dist (m)		155.6		199.3			494.4		672.1	
urn Bay Length (m)	115.0		145.0			65.0		125.0		
iase Capacity (vph)	428	1004	371	474	209	261	1690	730	2265	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
teduced v/c Ratio	0.98	0.42	0.18	0.22	0.88	0.39	0.89	0.19	29.0	
C										

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Machine Part	EBI EBT EBR WEI WET WBR NBI NBI NBI SBI SBI SBI SBI SBI SBI SBI SBI SBI S		1	†	<u> </u>	-	Ļ	1	✓	←	4	۶	→	*
15	100 100	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
385 220 165 60 95 490 95 1435 40 130 1180 1900	386 220 165 60 95 490 95 1345 40 130	Lane Configurations	14	44		<u>r</u>	+	×.	-	444		1	441	
386 220 165 60 95 490 190 1900 1900 1900 1900 1900 1900 1	386 220 165 60 95 490 95 1345 40 130 1900	Traffic Volume (vph)	382	220	165	09	92	490	92	1345	40	130	1180	210
1900 1900	1900 1900	Future Volume (vph)	382	220	165	09	92	490	92	1345	40	130	1180	210
50 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 1.00	5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 0.99 100 100 100 100 100 100 100 100 100 1	100 0.94 0.95 0	Total Lost time (s)	2.0	7.0		2.0	2.0	2.0	2.0	7.0		2.0	7.0	
1,00 1,09 1,00	1.00 0.99 1.00 1.00 1.00 1.00 1.00 1.00	Lane Util. Factor	0.97	0.95		1.00	1.00	1.00	1.00	0.91		0.97	0.91	
1,00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Frpb, ped/bikes	9:	0.99		1.00	1.00	0.99	1.00	1:00		1.00	9.	
1,00 0,94 1,00 1,00 0,95 1,00 0,95 1,00 0,95 1,00	100 0.94 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Flpb, ped/bikes	1:00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
1906 100	9.95 1.00 0.95 1.00 1.05 1.00 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Ŧ.	1:00	0.94		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
3213 3234 1723 1500 1736 5041 3562 4973 10	3213 3234 1783 1727 1550 1736 5041 3502 44 0.95 100 0.051 100 0.13 100 0.95	Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
0.95 1,00 0,51 1,00 0,13 1,00 0,95 1	0.95 1.00 0.51 1.00 0.13 1.00 0.95 1 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (prot)	3213	3234		1783	1727	1590	1736	5041		3502	4973	
3213 3234 953 1727 1590 229 5041 3502 4973 192 092 092 092 092 092 092 092 092 092 0	3213 3234 953 1727 1590 229 5041 3502 46 1	Flt Permitted	0.95	1.00		0.51	1.00	1.00	0.13	1.00		0.95	1.00	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	3213	3234		953	1727	1590	229	5041		3502	4973	
418 239 179 65 103 533 103 1462 43 141 1283 9 48 28 10 6 6 10 6 17 194 141 1494 1 48 28 18 10 10 0 0 0 0 0 17 1494 178 178 178 178 178 18 1 1 1 1 1 1 1494 1	418 239 179 65 103 533 103 1462 43 141 11 4 18 290 0 6 0 0 84 0 3 0 0 141 14 1 4 4 4 1 1 1 1 1 1 1 1 1 1 1 1	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
1) 0 128 0 0 0 54 0 0 17 1 4 4 4 4 1 1 1 1 1 1494 9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1% 0 2 0 0 0 0 0 3 0 0 0 0 0 0 2 0 0 0 0 0 0 0 3 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 7 4 4 7 1% 4% 2% 2% 2% 0% 1% Prof. NA pm+pt NA pm+ov pm+pt NA Prof. NA Prof. NA B 2 2 2 0 0 0 0 0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 53.3 0.21 0.44 0.31 0.34 0.42 0.33 0.21 0.44 0.32 0.42 0.33 0.21 0.44 0.30 0.02 0.06 0.04 0.30 0.04 0.00 0.04 0.30 0.04 0.00 0.00 0.04 0.00 0.04 0.00	1) 0 128 0 0 0 54 0 3 1502 0 141 14 14 14 14 14 14 14 14 14 14 14 14	Adj. Flow (vph)	418	239	179	92	103	533	103	1462	43	141	1283	228
1	1) 418 290 0 65 103 479 103 1502 0 141 14 19 1 4	RTOR Reduction (vph)	0	128	0	0	0	24	0	က	0	0	17	0
1	1	Lane Group Flow (vph)	418	290	0	65	103	479	103	1502	0	141	1494	٥
9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1% 1% 10% 1% 1% 10% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Confl. Peds. (#/hr)	_		4	4		_	τ-		τ-	_		_
Prof. NA	Prof. NA	Heavy Vehicles (%)	%6	4%	5%	1%	10%	1%	4%	7%	5%	%0	1%	2%
Prot NA pm+pt NA pm+ov pm+pt NA Prot	Prot NA pm+pt NA pm+ov pm+pt NA Prot 7	Bus Blockages (#/hr)	0	2	0	0	0	0	0	3	0	0	0	O
16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 20.1 0.21 0.33 0.21 0.21 0.33 0.21 0.21 0.33 0.21 0.21 0.33 0.21 0.21 0.33 0.21 0.21 0.34 0.42 0.33 0.21 0.21 0.34 0.42 0.32 0.44 0.32 1646 7729 2.0 0.04 0	16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 E	Turn Type	Prot	Ν		pm+pt	¥	vo+mq	pm+pt	¥		Prot	Ν	
16.0 22.8 24.8 15.8 40.8 5.1 39.2 25.0 5.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 5.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 5.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 428 614 259 22.7 540 23.2 1546 72.9 2.0 428 614 259 22.7 540 23.2 1546 72.9 2.0 5.0 3.0 0.02 0.06 0.018 0.04 0.04 0.04 5.1 4.2 39.2 48.1 37.4 22.1 38.8 39.2 2.0 5.0 1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 1.00 5.1 4.4 40.3 51.1 54.5 18.7 40.6 39.5 68.8 22.7 22.7 39.2 22.7 39.2 68.8 42.5 HCM 2000 Level of Service D 1.00 1.00 0.91 1.00 0.91 1.00 1.00 0.91 68.9 1.2 1.2 1.2 1.2 1.2 1.2 1.2 69.9 42.5 HCM 2000 Level of Service E 69.9 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 69.9 42.5 HCM 2000 Level of Service E 69.9 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 69.9 42.5 HCM 2000 Level of Service E	16.0 22.8 24.8 15.8 40.8 2.2 25.0 5.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 5.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 5.0 20.13 0.19 0.21 0.13 0.34 0.42 0.33 0.21 0.21 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 428 614 259 22.7 540 6.23 1646 729 2.0 428 614 259 22.7 540 6.04 0.04 0.04 618 619 6.047 0.02 0.06 0.018 0.04 0.04 0.04 618 619 6.047 0.02 0.06 0.018 0.04 0.04 619 610 1.00 1.00 1.00 1.00 0.78 0.91 1.00 610 1.00 1.00 1.00 1.00 0.78 0.91 1.00 7	Protected Phases	7	4		က	∞	_	2	2		-	9	
16.0	160	Permitted Phases				00		∞	2					
16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 5.	16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 5.	Actuated Green, G (s)	16.0	22.8		24.8	15.8	40.8	50.1	39.2		25.0	53.3	
0.13	0,13	Effective Green, g (s)	16.0	22.8		24.8	15.8	40.8	50.1	39.2		25.0	53.3	
5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	5.0 7.0 5.0 7.0 5.0 <td>Actuated g/C Ratio</td> <td>0.13</td> <td>0.19</td> <td></td> <td>0.21</td> <td>0.13</td> <td>0.34</td> <td>0.42</td> <td>0.33</td> <td></td> <td>0.21</td> <td>0.44</td> <td></td>	Actuated g/C Ratio	0.13	0.19		0.21	0.13	0.34	0.42	0.33		0.21	0.44	
5.0 5.0 <td> 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0</td> <td>Clearance Time (s)</td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td>2.0</td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td></td>	5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Clearance Time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
428 614 259 227 540 232 1646 729 613 0.09 0.02 0.06 6.018 0.04 0.03 0.04 0.03 0.04 0.03 0.04 0.03 0.03	428 614 259 227 540 232 1646 729 601 0.03 0.09 0.02 0.06 6018 0.04 6030 0.04 0.03 0.03 0.04 0.03 0.04 0.03 0.04 0.03 0.04 0.03 0.04 0.03 0.04 0.04	Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Co.13 0.09 0.02 0.06 co.18 0.04 co.03 0.04 0.08 0.47 0.02 0.05 0.45 0.89 0.44 51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 3.74 4.2 4.4 40.3 5.11 54.5 18.7 40.6 E D D D D B D D D D 66.8 52.7 39.2 1.00 0.91	c0.13 0.09 0.02 0.06 c0.18 0.04 c0.30 0.04 0.08 0.47 0.25 0.45 0.89 0.44 0.91 0.19 51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 2 37.4 1.2 1.1 3.0 1.71 1.4 5.1 0.3 89.2 44.4 40.3 51.1 54.5 18.7 40.6 39.5 F 66.8 52.7 B D D D D D D F 66.8 52.7 B D Capacity ratio 0.91 N(s) 120.0 Sum of lost time (s) E Utilization 83.9% ICU Level of Service E	Lane Grp Cap (vph)	428	614		259	227	240	232	1646		729	2208	
0.98 0.47 0.03 0.12 0.14 0.19 51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 2 37.4 1.2 1.1 3.0 1.7 1.4 5.1 0.3 57.4 4.4 4.3 5.1 5.4 18.7 4.0 0.3 58.8 4.3 5.7 4 5.2 1 38.8 39.2 59.2 4.4 4.0.3 5.1 5.4 5.1 18.7 4.0 0.3 59.5 4.4 4.3 5.1 5.4 5.1 18.7 4.0 0.3 59.5 4.4 4.3 5.1 5.4 5.1 18.7 0.0 59.7 5.7 5.7 39.2 59.7 5.8 5.7 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8	0.98 0.47 0.03 0.12 0.14 51.8 43.2 0.25 0.45 0.89 0.44 0.91 0.19 51.8 43.2 0.25 0.45 0.89 0.44 0.91 0.19 2 37.4 1.2 1.00 1.00 0.78 0.91 1.00 5 99.2 44.4 40.1 1.30 1.71 1.4 5.1 0.3 8 9.2 44.4 40.1 1.4 5.1 0.3 F 66.8 5.7 5.1 8.7 40.6 39.5 F 66.8 52.7 B D D D D Cepacityratio 0.91	v/s Ratio Prot	c0.13	0.09		0.02	90.0	c0.18	0.04	c0.30		0.04	0.30	
0.88 0.47 0.25 0.45 0.89 0.44 0.91 0.19 51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 51.8 43.2 48.1 37.4 22.1 38.8 39.2 57.4 1.2 1.1 3.0 1.00 1.00 0.78 0.91 1.00 57.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 57.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 68.8 51.1 54.5 18.7 40.6 39.5 66.8 52.7 39.2 66.8 52.7 39.2 66.8 52.7 39.2 66.8 62.7 39.2 66.8 15.7 40.6 39.5 66.8 52.7 0.3 66.8 15.7 40.6 39.5 66.8 15.7 40.6 39.5 66.8 15.7 1.2 1.0 0.3 66.8 15.7 1.2 1.0 0.3 66.8 15.7 1.2 1.0 0.3 66.8 15.7 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2	0.88 0.47 0.25 0.45 0.89 0.44 0.91 0.19 5.10 0.10 0.25 0.45 0.89 0.44 0.91 0.19 5.10 0.10 0.10 0.27 0.28 0.39 0.44 0.39 0.39 5.10 0.10 0.10 0.10 0.78 0.91 0.03 5.7.4 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 5.7.4 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 5.7.4 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 5.7.4 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 5.7.4 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 5.7.4 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 5.7.7 1.2 1.3 1.3 1.2 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	v/s Ratio Perm				0.03		0.12	0.14					
518 43.2 39.2 48.1 37.4 22.1 38.8 39.2 39.2 48.1 37.4 22.1 38.8 39.2 39.2 37.4 1.2 1.0 1.00 1.00 1.00 1.00 0.0	518 43.2 39.2 48.1 37.4 22.1 38.8 39.2 38.1 37.4 22.1 38.8 39.2 37.4 2	v/c Ratio	0.98	0.47		0.25	0.45	0.89	0.44	0.91		0.19	0.68	
1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 0.78 0.91 1.00 0.30 0.30 0.78 0.91 1.00 0.30 0.30 0.30 0.30 0.30 0.30 0.3	1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	Uniform Delay, d1	21.8	43.2		39.5	48.1	37.4	22.1	38.8		39.2	26.5	
2 37.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 1 1 8.2 2 44.4 4.0 3 51.1 54.5 18.7 40.6 39.5 28 2 6.8 2 2.7 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	2 37.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 1 89.2 44.4 40.3 51.1 54.5 18.7 40.6 39.5 28 6.8 5.2 D D D D D D D D D D D D D D D D D D D	Progression Factor	1:00	1.00		1.00	1.00	1.00	0.78	0.91		1.00	1.00	
89.2 44.4 40.3 51.1 54.5 18.7 40.6 39.5 28 F D D D D B D D D C B E D D D D D D D D D D D D D D D D D D	89.2 44.4 40.3 51.1 54.5 18.7 40.6 39.5 28 F D D D D B D D D 68.8 52.7 39.2 29 7 capacity ratio 0.91 120.0 Sum of lost time (s) 120.0 Utilization 83.9% ICU Level of Service E 15.0	Incremental Delay, d2	37.4	1.2			3.0	17.1	4.	5.		0.3	1.7	
F D D D B D D D D D D D D D D D D D D D	F D D D B D D D D D D D D D D D D D D D	Delay (s)	89.2	47.4		40.3	21.1	54.5	18.7	40.6		39.5	28.2	
66.8 52.7 392 E D D A 22.5 HCM 2000 Level of Service D Capacity ratio 0.91 20.0 Sum of lost time (s) 24.0 Utilization 8.3% I CU Level of Service E 15.0 Sum of lost time (s) 24.0 To CU Level of Service E	66.8 52.7 39.2 F D D A 22.5 HCM 2000 Level of Service D Capacity ratio 0.91 24.0 Utilization 83.9% ICU Level of Service E 15	Level of Service	ш	□		۵	□	۵	മ	□		□	ပ	
E D D D D D D D D D D	ty 2	Approach Delay (s)		8.99			52.7			39.5			29.5	
A2.5 HCM 2000 Level of Service Capacity ratio 0.91 Sum of lost time (s) In (s) 120.0 Sum of lost time (s) Utilization 83.9% ICU Level of Service	alay 42.5 HCM 2000 Level of Service (Capacity ratio 0.91 Sum of lost time (s) Utilization 83.9% ICU Level of Service 15	Approach LOS		ш						Ω			O	
alay 42.5 HCM 2000 Level of Service Capacity ratio 0.91 0.91 In (s) 120.0 Sum of lost time (s) Utilization 83.9% ICU Level of Service 15 15	slay 42.5 HCM 2000 Level of Service Capacity ratio 0.91 0.91 h (s) 120.0 Sum of lost time (s) Utilization 83.9% ICU Level of Service 15 15	Intersection Summary												
Capacity ratio 0.91 Sum of lost time (s) h (s) 120.0 Sum of lost time (s) Utilization 8.3.9% ICU Level of Service 15	Capacity ratio 0.91 h (s) 120.0 Sum of lost time (s) Utilization 8.3.9% IOU Level of Service 15	HCM 2000 Control Delay			42.5	Ĭ	SM 2000	Level of	Service		۵			
h (s) 120.0 Sum of lost time (s) Utilization 83.9% ICU Level of Service 15	h (s) 120.0 Sum of lost time (s) Utilization 83.9% ICU Level of Service 15	HCM 2000 Volume to Capa	acity ratio		0.91									
Utilization 83.9%	Utilization 83.9% 15	Actuated Cycle Length (s)			120.0	เร	sol jo mr	t time (s)			24.0			
15	15	Intersection Capacity Utiliza	ation		83.9%	2	U Level	of Service			ш			
	n Critical I and Groun	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis Future Total PM (Phase 2) 11: Speers Road & Interim Connection Upper Kerr Village (8124-01)

																																								A	
																											SB 2	33	0	జ	808	0.04	1.0	9.6	⋖						
•	SBR	¥_	೫	8			0.92	83									0.79	099			45	6.9		3.3	8	808	SB 1	0	0	0	1700	0.11	0.0	0.0	∢	9.6	∢			ICU Level of Service	
۶	SBL	r	0	0	Stop	%0	0.92	0									0.82	1748	1278	470	1190	8.9	2.8	3.5	100	295	WB2	498	0	87	1700	0.29	0.0	0.0						J Level o	
1	WBR		8	8			0.92	87																			WB1	823	0	0	1700	0.48	0.0	0.0		0.0				⊴	
ļ	WBT	₽	1135	1135	Free	%0	0.92	1234						LWLTL	2	162											EB3	470	0	0	1700	0.28	0.0	0.0					0.1	43.9%	12
†	EBT	‡	865	865	Free	%0	0.92	940						TWLTL TWLTL	2	73											EB2	470	0	0	1700	0.28	0.0	0.0							
•	EBL	<u>,-</u>	0	0			0.92	0						_			0.79	1321			879	4.1		2.2	100	615	EB 1	0	0	0	1700	0.00	0.0	0.0		0.0				u	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

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Timings
Timings

14: Kerr Street & Rail Track

Upper Kerr Village (8124-01)

																																of Green		
	94					4				2.0	22.0	40.0	25%	38.0	2.0	0.0					3.0	3.0	0.0	0.0	Max	7.0	11.0	0				SBT, St		
•	SBT	+	625	625	ΑA	9		ဖ		2.0	22.0	140.0	77.8%	138.0	2.0	0.0	0.0	2.0			3.0	3.0	0.0	0.0	Max	7.0	11.0	0				NBT and 6:		
-	NBT	+	069	069	Ϋ́	2		5		2.0	22.0	140.0	%8.77	138.0	2.0	0.0	0.0	2.0			3.0	3.0	0.0	0.0	Max	7.0	11.0	0				shase 2:1		
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)			(s) ue	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 180	Actuated Cycle Length: 180	Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	Natural Cycle: 50	Control Type: Pretimed

Splits and Phases: 14: Kerr Street & Rail Track

	1 04	40 s		
Opiles and Tilases. 14: Ivel Oriental Tilach				
obligation indeed.	Ø2 (R)	140 s	↓ Ø6 (R)	SOLT

With Kerr St Improvements BA Group - EFS

Queues			Future Total PM (Phase 2)
14: Kerr Street & Rail Track	il Track		Upper Kerr Village (8124-01)
	←	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	719	651	
v/c Ratio	0.50	0.45	
Control Delay	9.3	8.7	
Queue Delay	52.8	0:0	
Total Delay	62.1	8.7	
Queue Length 50th (m)	88.4	75.8	
Queue Length 95th (m)	111.6	95.9	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1442	
Starvation Cap Reductn	828	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.17	0.45	
Intersection Summary			

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With Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total PM (Phase 2)	Upper Kerr Village (8124-01)	

	4	†	<i>></i>	>	Į.	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	069	0	0	625	0
Future Volume (vph)	0	0	0	0	0	0	0	069	0	0	625	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			2.0	
Lane Util. Factor								1.00			1.00	
Fr								1.00			1:00	
Fit Protected								1.00			1.00	
Satd. Flow (prot)								1881			1881	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1881	
Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96:0	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	719	0	0	651	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	719	0	0	651	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	1%	%0
Turn Type								¥			N	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1442	
v/s Ratio Prot								00.38			0.35	
v/s Ratio Perm												
v/c Ratio								0.50			0.45	
Uniform Delay, d1								7.9			7.5	
Progression Factor								1.00			1.00	
Incremental Delay, d2								1.2			1.0	
Delay (s)								9.5			8.5	
Level of Service								V			∢	
Approach Delay (s)		0.0			0.0			9.5			8.5	
Approach LOS		∢			∢			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			8.9	¥	3M 2000	HCM 2000 Level of Service	service		∢			
HCM 2000 Volume to Capacity ratio	ty ratio		0.39									
Actuated Cycle Length (s)			180.0	S	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	E		39.6%	೦	U Level o	ICU Level of Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

With Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2)

1: Kerr Street & Wyecroft Road

Upper Kerr Village (8124-01)

Figuration Fig. Fig. NBI NBI SBI		\	*		_	•	*		
h) 5 90 200 325 475 125 h) 5 90 200 325 475 125 c) 6 90 200 325 475 125 c) 7 6 90 200 325 475 125 c) 8 0 200 325 475 125 c) 9 0 200 325 475 c) 9 0 200 325 475 c) 9 0 200 325 c) 9 0 200 000 c) 9 0 0 0 0 133 c) 9 0 0 0 0 0 0 0 c) 9 0 0 0 c) 9 0 0 0 0 0 c	Movement	EBL	EBR	NBL	NBT	SBT	SBR		
h) 5 90 200 325 475 125 h) 5 90 200 325 475 125 0.94 0.94 0.94 0.94 0.94 0.94 0.84 0.94 0.94 0.94 0.94 0.94 0 6 213 346 505 133 None None 1170 319 638 68 7.0 4.1 146 674 942 73 173 173 301 5 96 213 173 173 301 5 96 213 173 173 301 6 96 0 0 0 0 133 746 674 942 1700 1700 1700 1700 703 0.14 0.23 0.10 0.0 0.0 70 0.13 0.14 0.23 0.10 0.10 0.0 70 0.18 A 712 3.8 6.6 0.0 0.0 0.0 0.0 712 3.8 7.0 ICU Level of Service	nfigurations	r	*	×	‡	₩.			
Skop Free Free Conditions and the first state of Shop Free Free Conditions and the first state of Shop Free Free Conditions and the first state of Shop Free Free Conditions and the first state of Shop Free Free Free Conditions and the first state of Shop Free Free Free Free Conditions and the first state of Shop Free Free Free Free Free Free Free Fre	olume (veh/h)	2	6	200	325	475	125		
Stop 6% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	olume (Veh/h)	2	06	200	325	475	125		
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94	ıtrol	Stop			Free	Free			
0.94 0.94 0.94 0.94 0.94 0.94 0.94 0.94		%0			%0	%0			
5 96 213 346 505 133	ur Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Hone None None III No	ow rate (vph)	2	96	213	346	202	133		
Hone None None (170 319 638 6.8 7.0 4.1 46 674 942 7.2 97 86 7.1 473 173 337 301 6.8 7.0 6.1 173 173 337 301 6.9 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ans								
e 1170 319 638 68 7.0 4.1 86 7.0 4.1 942 173 173 173 173 173 174 176 176 176 176 176 176 176 176 176 176	th (m)								
None None I 1170 319 638 68 70 4.1 46 674 942 1770 173 173 377 301 6 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 77 8 8 70 0 0 0	Speed (m/s)								
Hone None None 1170 319 638 1170 319 638 6.8 7.0 4.1 1170 319 638 6.8 7.0 4.1 146 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 337 301 5 96 0 0 0 0 133 146 674 942 1700 1700 1700 1700 0.03 0.14 0.23 0.10 0.10 0.20 0.18 M) 0.08 8 66 0.0 0.0 0.0 0.0 12.2 3.8 6.0 0.0 0.0 0.0 12.2 3.8 A IVEN INDICENSIVE	Slockage								
Mone None	ו flare (veh)								
e 1170 319 638 e 7.0 4.1 1170 319 638 6.8 7.0 4.1 3.5 3.3 2.2 97 86 77 146 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 377 301 5 96 0 0 0 0 0 0 86 0 0 0 0 133 0 14 674 942 1700 1700 1700 1700 0 30.5 11.2 9.9 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0 0 13.3 V	,/pe				None	None			
Holization 1170 319 638 Fig. 197 638 Fig. 197 638 Fig. 197 638 Fig. 197 674 942 Fig. 197 670 Fig. 197 674 942 Fig. 197 670 Fig. 197	torage veh)								
e 1170 319 638	signal (m)								
e 1170 319 638 6.8 7.0 4.1 6.8 7.0 4.1 146 674 942 EB 1 EB 2 NB 1 NB 2 NB 3 SB 1 SB 2 5 96 213 173 173 337 301 5 96 0 0 0 0 0 0 96 0 0 0 0 133 146 674 942 170 1700 1700 0 96 0 0 0 0 0 0 96 0 0 0 0 0 146 674 942 170 1700 1700 0 96 0 0 0 0 0 146 674 942 170 1700 1700 15 9 0 0 0 0 0 0 16 9 0 0 0 0 0 17 9 0 0 0 0 0 18 A A 15 A IV 10 I Level of Service	on unblocked								
1170 319 638 6.8 7.0 4.1 3.5 3.3 2.2 97 88 77 146 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 301 5 0 0 0 0 0 0 96 0 0 0 0 0 0 96 0 0 0 0 0 08 0 0 0 0 0 0 0 0 0 0 0 0 0 146 674 942 1700 1700 1700 1700 0 30 14 0.23 0.10 0.10 0.00 0 0 0 0 0.00 12.2 3.8 0.0 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0	cting volume	1170	319	638					
H170 319 638 6.8 7.0 4.1 3.5 3.3 2.2 97 86 77 146 674 942 5 96 213 173 337 301 5 96 213 173 337 301 5 96 0 0 0 0 133 146 674 942 1700 1700 1700 1700 0.03 0.14 0.23 0.10 0.10 0.20 0.18 M) 0.08 8.6 6.0.0 0.0 0.0 0.0 D B A A A 15% ICU Level of Service	je 1 conf vol								
1170 319 638 6.8 7.0 4.1 3.5 3.3 2.2 97 86 77 146 674 942 5 0 213 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	je 2 conf vol								
8.8 7.0 4.1 3.5 3.3 2.2 97 86 77 146 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 337 301 5 96 0 0 0 0 133 146 674 942 1770 1700 1700 0.03 0.14 0.23 0.10 0.10 0.0 0.0 30.5 11.2 9.9 0.0 0.0 0.0 0.0 12.2 3.8 A CU Level of Service	locked vol	1170	319	638					
3.5 3.3 2.2 97 86 77 146 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 37 301 5 0 213 0 0 0 0 0 0 0 6 0 0 0 133 146 674 942 1700 1700 1700 1700 0.03 0.14 0.23 0.10 0.10 0.20 0.0 0.03 0.14 0.23 0.10 0.10 0.20 0.0 12.2 9.9 0.0 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0	(s)	9.9	7.0	4.1					
35 33 22 146 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 337 301 5 96 213 173 173 337 301 6 0 213 0 0 0 0 133 146 674 942 1700 1700 1700 1700 003 0.14 0.23 0.10 0.10 0.20 0.18 003 0.14 0.23 0.10 0.10 0.20 0.18 0 8 36 6 0.0 0.0 0.0 0.0 D B A O 0 0 0 0 0 0.0 122 3.8 0.0 0.0 0.0	(s)								
97 86 77 146 674 942 EB 1 EB 2 NB 1 NB 2 NB 3 SB 1 SB 2 5 90 213 173 173 337 301 5 90 0 0 0 0 0 0 96 0 0 0 0 0 133 146 674 942 1700 1700 1700 0 03 0.14 023 0.10 0.10 0.20 0.18 m) 0.8 38 6.6 0.0 0.0 0.0 0.0 20.5 11.2 9.9 0.0 0.0 0.0 0.0 12.2 3.8 A 0.0 0.0 0.0 NUlization 41.5% ICU Level of Service		3.5	3.3	2.2					
H46 674 942 EB1 EB2 NB1 NB2 NB3 SB1 SB2 5 96 213 173 173 301 5 0 0 0 0 0 0 36 0 0 0 0 133 146 674 942 1700 1700 1700 0.03 0.14 0.23 0.10 0.10 0.20 0.18 m) 0.8 8 66 0.0 0.0 0.0 30.5 11.2 9.9 0.0 0.0 0.0 12.2 3.8 A CU Level of Service	free %	97	98	11					
EB1 EB2 NB1 NB2 NB3 SB1 SB2 SB 2 SB 2 SB 2 SB 2 SB 2 SB 2 S	ity (veh/h)	146	674	942					
5 96 213 173 173 337 301 5 0 213 0 0 0 0 0 0 96 0 0 0 0 133 146 674 942 1700 1700 1700 1700 0.03 0.14 0.23 0.10 0.10 0.20 0.18 0.08 3.6 6.6 0.0 0.0 0.0 0.0 D B A 0.0 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0 41.5% ICU Level of Service	Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2	
5 0 213 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	otal	2	96	213	173	173	337	301	
10 96 0 0 133 146 674 942 1700 1700 1700 0.03 0.14 0.23 0.10 0.20 0.18 0.08 3.8 6.6 0.0 0.0 0.0 0.0 20.5 11.2 9.9 0.0 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0 8 A 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0 12.2 3.8 0.0 0.0 0.0 12.6 CU Level of Service	.eft	2	0	213	0	0	0	0	
146 674 942 1700 1700 1700 1700 0.03 0.14 0.23 0.10 0.10 0.00 0.18 0.00 0.00 0.00 0.00	light	0	96	0	0	0	0	133	
m) 0.83 0.14 0.23 0.10 0.10 0.20 0.18 0.8 3.6 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0		146	674	945	1700	1700	1700	1700	
m) 0.8 3.8 6.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	o Capacity	0.03	0.14	0.23	0.10	0.10	0.20	0.18	
30.5 11.2 9.9 0.0 0.0 0.0 0.0 D B A 0.0 0.0 0.0 12.2 3.8 0.0 B 2.6 Utilization 41.5% ICU Level of Service	ength 95th (m)	8.0	3.8	9.9	0.0	0.0	0.0	0.0	
122 3.8 0.0 B A 0.0 Y 2.6 IUlization 41.5% ICU Level of Service	Jelay (s)	30.5	11.2	6.6	0.0	0.0	0.0	0.0	
12.2 3.8 0.0 B 2.6 Utilization 41.5% ICU Level of Service	0	Ω	Ω	∢					
y 2.6 ICU Level of Service 41.5% ICU Level of Service	ı Delay (s)	12.2		3.8			0.0		
2.6 Utilization 41.5% ICU Level of Service	SOT	В							
2.6 Ulitzation 41.5% ICU Level of Service	on Summary								
Utilization 41.5% ICU Level of Service	Delay			26					
Ounization 41.3/0 IOO Edvel of Octytoe	Delay on Canacity I Hilizatio			41 5%	_	0,0	Convice		4
	on capacity ounzain	_		41.070	2) Level 0	Service		<

Without Kerr St Improvements

Synchro 11 Report

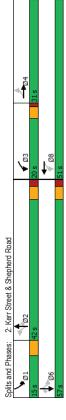
BA Group - EFS

Page 1

Timings 2: Kerr Street & Shepherd Road

(101/01/01/101/101/101/101/101/101/101/1
(10-4710) aftern village (0174-01)

ane Group WBI WBT NBI SBI SBT 04 Lace Conjunctors 7		*	,	_	L	•	+		
120	ane Group	WBL	WBT	NBT	NBR	SBL	SBT	94	
120 0 300 70 90 420 120 0 300 70 90 420 120 0 300 70 90 420 420 120 120 120 120 120 120 120 120 120 1	ane Configurations	#	2	‡	¥	*	‡		
120 0 300 70 90 420 9 8 2 2 6 3 8 2 2 6 5 5 5 180 180 70 180 9 0 220 282 282 110 282 200 51,0 420 185% 47.2% 38.9% 38.9% 13.9% 52.8% 160 47.0 36.8 36.8 11.0 51.8 3 0 3 0 3 3 3 3 4 0 33 1,0 0 0 0 0 0 0 0 0 0 0 None None Min Min None Min 11.0 13.0 1.0 0 0 0 0 0 0 0 0 0 0 0 None None Min Min None Min 14.0 1.45.7	raffic Volume (vph)	120	0	300	0.2	90	420		
pmppt NA NA Perm pmpt NA NA Perm pmpt NA S S S S S S S S S S S S S S S S S S	-uture Volume (vph)	120	0	300	70	90	420		
3 8 2 1 6 8 8 2 6 8 8 2 6 8 8 2 6 8 8 8 2 6 8 9 8 2 6 8 9 8 2 16 8 9 8 2 6 8 9 8 8 8 8 8 8 9 8 8 8 8 8 8 9 8 8 9 8 8 8 8 9 8 9	urn Type	pm+pt	ΑA	Ϋ́	Perm	pm+pt	₹		
8 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Protected Phases	က	∞	2		_	9	4	
3 8 2 2 1 6 50 50 180 180 7.0 180 200 22.0 28.2 28.2 11.0 28.2 200 11.0 42.0 42.0 42.0 15.0 57.0 18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 16.0 47.0 36.8 38.9% 13.9% 52.8% 16.0 0.0 0.0 0.0 0.0 0.0 0 0.0 0.0 0.0 0.0	Permitted Phases	∞			2	9			
5.0 5.0 18.0 18.0 7.0 18.0 28.2 28.2 11.0 28.2 20.0 51.0 42.0 42.0 15.0 57.0 18.0 57.0 18.0 51.0 42.0 42.0 15.0 57.0 18.0 57.0 51.0 42.0 42.0 15.0 57.0 18.0 47.0 36.8 38.9% 38.9% 13.9% 52.8% 16.0 47.0 36.8 39.8 38.9 40 3.3 40 3.3 1.0 10 10 10 10 19 19 0.0 19 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Detector Phase	m	∞	2	2	~	9		
50 50 180 180 70 180 20 20 220 228 28.2 28.2 110 28.2 200 51.0 42.0 42.0 41.0 57.0 180 20 51.0 51.0 42.0 42.0 42.0 42.0 42.0 42.0 42.0 42	Switch Phase								
90 220 282 282 110 282 282 110 282 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 110 282 282 282 282 282 282 282 282 282 28	Minimum Initial (s)	2.0	2.0	18.0	18.0	7.0	18.0	2.0	
200 510 420 420 150 570 16.8% 47.2% 38.9% 38.9% 13.9% 52.8% 16.8% 47.2% 38.9% 38.9% 13.9% 52.8% 16.8% 47.2% 38.9% 38.9% 13.9% 52.8% 16.8% 40 3.3 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.	Minimum Split (s)	0.6	22.0	28.2	28.2	11.0	28.2	22.0	
18.5% 47.2% 38.9% 38.9% 13.9% 52.8% 16.0 47.0 36.8 36.8 11.0 51.8 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	otal Split (s)	20.0	51.0	45.0	45.0	15.0	57.0	31.0	
160 470 368 368 110 518 30 30 3.3 3.3 40 3.3 10 0.0 0.0 0.0 0.0 0.0 0.0 140 40 52 52 40 52 1ead Lag Lag Lead Yes Yes Yes Yes Yes Yes 30 30 30 3.5 3.5 2.5 3.5 30 0.0 0.0 0.0 0.0 0.0 0.0 None Nane Min Min Nane Min 170 110 130 130 130 130 130 130 130 130 13	otal Split (%)	18.5%	47.2%	38.9%	38.9%	13.9%	25.8%	29%	
30 30 33 33 40 33 31 40 33 10 0 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Aaximum Green (s)	16.0	47.0	36.8	36.8	11.0	51.8	27.0	
10 1.0 1.9 1.9 0.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	'ellow Time (s)	3.0	3.0	3.3	3.3	4.0	3.3	3.0	
100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	VII-Red Time (s)	1.0	1.0	1.9	1.9	0.0	1.9	1.0	
140 440 5.2 5.2 440 5.2 140 5.	ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Lead Lag Lag Lead Yes Ye	otal Lost Time (s)	4.0	4.0	5.2	5.2	4.0	5.2		
Yes Yes Yes Yes Yes 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5 3.5	.ead/Lag	Lead		Lag	Lag	Lead		Lag	
30 30 35 35 25 35 35 35 35 35 35 35 36 30 30 30 30 30 30 30 30 30 30 30 30 30	.ead-Lag Optimize?	Yes		Yes	Yes	Yes		Yes	
30 30 30 30 30 30 30 30 30 30 30 30 30 3	/ehide Extension (s)	3.0	3.0	3.5	3.5	2.5	3.5	3.0	
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	/linimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	ime Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
None None Min Min None Min 7,0 10,0 10,0 10,0 10,0 10,0 10,0 10,0	ime To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
7.0 10.0 10.0 10.0 10.0 11.0 13.0 13.0 13	Recall Mode	None	None	Min	Min	None	Min	None	
11.0 13.0 13.0 13.0 13.0 13.0 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Valk Time (s)		7.0	10.0	10.0		10.0	7.0	
. 45.7	lash Dont Walk (s)		11.0	13.0	13.0		13.0	11.0	
ntersection Summary ycle Length: 108 Activated Cycle Length: 45.7 Activated Cycle: 75 Sontrol Type: Semi Act-Uncoord	Pedestrian Calls (#/hr)		0	2	2		2	0	
ycle Length: 108 Adualed Cycle Length: 45.7 Aetural Cycle: 75 Sontrol Type: Semi Act-Uncoord	ntersection Summary								
kduated Öycle Length: 45.7 katural Cycle: 75 Dontrol Type: Semi Act-Uncoord	Sycle Length: 108								
katural Cycle: 75 Sontrol Type: Semi Act-Uncoord	Actuated Cycle Length: 45.7								
Sonitral Type: Semi Act-Uncoord	Vatural Cycle: 75								
	Control Type: Semi Act-Unco	poord							



Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Ouenes

2: Kerr Street & Shepherd Road	epherd	Road					Upper Kerr Village (8124-01)
3							
	•	ţ	4	4	٠	→	
(•	ŀ	- !		i	- 4	
Lane Group	WBL	WBT	NBI	NBK	SBL	SBT	
Lane Group Flow (vph)	132	236	330	11	66	462	
v/c Ratio	0.41	0.35	0.22	0.11	0.14	0.22	
Control Delay	22.0	1.4	10.2	5.9	4.0	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.7	0.1	
Total Delay	22.0	1.4	10.2	2.9	4.7	4.6	
Queue Length 50th (m)	9.7	0.0	9.3	0.0	2.4	0.7	
Queue Length 95th (m)	23.9	0.0	17.5	4.9	6.9	14.0	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	602	1510	2811	1215	771	3462	
Starvation Cap Reductn	0	0	0	0	462	1587	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	0.16	0.12	90:0	0.32	0.25	
Información Cummony							

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total AM (Phase 2)
Upper Kerr Village (8124-01)

Control Cheen EBI EBI EBI WBI		4	†	1	-	Ļ	4	•	←	•	۶	→	*
three (pc) 1 0 0 120 0 215 0 300 70 90 420 0 120 0 120 0 215 0 300 70 90 420 0 120 0 120 0 120 0 120 0 120 0 120 0 120 0 120 0 120 1300 130	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
tume (sph) 0 0 120 0 215 0 300 70 90 420 tume (sph) 0 0 120 0 215 0 300 70 90 420 fune (sh) 1 0 0 1 0 1 0 90 420 fune (sh) 1 0 1 0 1 0 90 420 fune (sh) 1 0 1 0 1 0 90 420 fune (sh) 1 0 1 0 1 0 90 420 fulless 1 0 1 0 1 0 90 420 fulless 1 0 1 0 1 0 90 420 fulless 1 0 1 0 1 0 90 420 field 1 0 1 0 1	Lane Configurations	*	43		×	€3		×	*	ĸ	K	**	*
Ulme (vph) 0 0 120 0 120 130 70 90 420 Hopidal 1900	Traffic Volume (vph)	0	0	0	120	0	215	0	300	02	06	420	0
February 1900 190	Future Volume (vph)	0	0	0	120	0	215	0	300	70	06	420	0
Fedorary 100 140	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Factor 100 100 0.95 100 0.95 100 1	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
Decides 100 0.97 100 1.00	Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
The control Delay 100 10	Frpb, ped/bikes				1:00	0.97			1.00	0.97	1.00	1:00	
Total Control Contro	Flpb, ped/bikes				1.00	1.00			1.00	1.00	1.00	1.00	
read 0.95 1.00 <th< td=""><td>ت</td><td></td><td></td><td></td><td>1.00</td><td>0.85</td><td></td><td></td><td>1.00</td><td>0.85</td><td>9 5</td><td>0.1</td><td></td></th<>	ت				1.00	0.85			1.00	0.85	9 5	0.1	
Fig. 2016 Fig. 3016 Fig.	Fit Protected				0.95	1.00			1.00	1.00	0.95	1.00	
Action (perm) 1274 1550 3497 1499 861 3505 Action (pol) 0 0 0 132 159 0 0 0 0 177 0	Satd. Flow (prot)				1664	1229			100	1499	1/85	3505	
Protection Part Color	Satd. Flow (perm)				1274	1559			3497	1499	861	3505	
(vph) 0 0 132 0 236 0 330 77 99 462 duction (vph) 0 0 0 132 59 5 5 5 5 5 5 6 0 <th< td=""><td>Peak-hour factor, PHF</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td><td>0.91</td></th<>	Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
duction (vph) 0 0 0 177 0	Adj. Flow (vph)	0	0	0	132	0	236	0	330	77	66	462	0
up Flow (rph) 0 0 132 59 0 330 39 462 side(HVI) 5 5 5 5 5 5 5 5 5 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 6 1 9 462 6 0 <t< td=""><td>RTOR Reduction (vph)</td><td>0</td><td>0</td><td>0</td><td>0</td><td>177</td><td>0</td><td>0</td><td>0</td><td>47</td><td>0</td><td>0</td><td>0</td></t<>	RTOR Reduction (vph)	0	0	0	0	177	0	0	0	47	0	0	0
sis (#Inft) 5 <th< td=""><td>Lane Group Flow (vph)</td><td>0</td><td>0</td><td>0</td><td>132</td><td>29</td><td>0</td><td>0</td><td>330</td><td>30</td><td>66</td><td>462</td><td>0</td></th<>	Lane Group Flow (vph)	0	0	0	132	29	0	0	330	30	66	462	0
hickes (%) 0% 0% 0% 8% 0% 0% 0% 2% 5% 1% 3% 1% 3% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Confl. Peds. (#/hr)	2		2	2		2			2	2		
rages (#Inf) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Heavy Vehides (%)	%	%	%	%	%	%0	%0	5%	2%	%	%	% '
seperate Perrm Inhabets Perrm Inhabets I	Bus Blockages (#/hr)	0	0	0	0	2	0	0	9	0	0	0	0
Phases 4 3 8 2 1 Ghesses 4 3 8 2 2 6 Ghesses 4 8 2 2 6 1 1 1 4 1 4 1 4 1 4 2 2 6 1 4 1 4 8 7 2 6 1 2 3	Turn Type	Perm			pm+pt	≨		Perm	≨	Perm	pm+pt	Ϋ́	Perm
Princes 4 126 126 126 1294 194 2 87 2 Green, G (s) 126 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 2 87 2 Green, G (s) 126 126 126 134 194 194 2 87 2 Green, G (s) 126 126 126 126 126 126 126 126 126 126	Protected Phases	,	4		က	∞		c	2	c	- (9	(
12	Actinitied Priases	4			0 40	3 01		7	101	7 01	0 0 0	7 00	P
Operation (s) OLZ SO OLZ	Effective Green a (s)				12.6	12.6			107	10.1	28.7	28.7	
Street S	Actuated o/C Ratio				0.25	0.25			038	3 2	0.57	0.57	
Attension (s) 3.0 3.0 3.0 3.5 3.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	Clearance Time (s)				4 0	4.0			52	5.2	4.0	5.2	
Cap (vph) 372 388 1343 575 586 14 Prof. c0.05 0.04 0.09 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.01 0.00 0.00 0.17 0 0.00 0.17 0 0.00 0.17 0 0.00 0.17 0 0.00 0.17 0 0.17 0.0 0.1 0.0 0.0 0.0 0.1 0.0 0.1 0.0 <td>Vehicle Extension (s)</td> <td></td> <td></td> <td></td> <td>3.0</td> <td>3.0</td> <td></td> <td></td> <td>3.5</td> <td>3.5</td> <td>2.5</td> <td>3.5</td> <td></td>	Vehicle Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
Prof. co0.05 0.04 0.09 0.02 od Perm c.0.04 0.09 0.02 0.08 Perm c.0.04 0.05 0.08 0.08 Delay, d.1 1.5 1.48 0.5 0.07 1.7 Delay, d.2 1.00 1.00 1.00 1.00 1.00 1.00 Ist Delay, d.2 0.0 0.1 1.5 1.0 1.0 0.1 0.1 0.0 1.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 0.0 0.1 </td <td>Lane Grp Cap (vph)</td> <td></td> <td></td> <td></td> <td>372</td> <td>388</td> <td></td> <td></td> <td>1343</td> <td>575</td> <td>586</td> <td>1991</td> <td></td>	Lane Grp Cap (vph)				372	388			1343	575	586	1991	
Perm co 0.04 0.05 0.06 0.07 0.08 0.05 0.06 0.05 0.06 0.05 0.05 0.07 0.08 0.05 0.05 0.05 0.07 0.06 0.05 0.05 0.07 0.06 0.02 0.00 0.00 0.00 0.00 0.00 0.00	v/s Ratio Prot				c0.05	0.04			60.0		0.02	00.13	
10 10 10 10 10 10 10 10	v/s Ratio Perm				c0.04					0.02	0.08		
belay, d1 15.5 14.8 10.6 9.8 5.2 and Eacher 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	v/c Ratio				0.35	0.15			0.25	0.02	0.17	0.23	
100 100	Uniform Delay, d1				15.5	14.8			10.6	8.6	5.2	5.4	
10	Progression Factor				1.00 0	00.1			1.00	1.00	3.0	0.1	
10.7 10.8	Incremental Delay, d2				9.0	0.2			0.1	0.0	0.1	0.1	
0.0 B B B B A A A A B B B B B B B B B B B	Delay (s)				16.1	15.0			10.7	9.8	5.3	5.5	
0.0 15.4 10.5 A B B B A CALL Subject to the control of Service A Society ratio 0.33 Sum of lost time (s) 17.2 Subject to the control of Service B 15 ICU Level of Service B	Level of Service				ш	<u>а</u>			ш :	∢	∢	∢ ;	
A B B B 9.7 HCM 2000 Level of Service A 9.7 HCM 2000 Level of Service A 9.7 HCM 2000 Level of Service A 50.5 Sum of lost time (s) 17.2 2ation 56.0% ICU Level of Service B	Approach Delay (s)		0.0			15.4			10.5			5.4	
9.7 HCM 2000 Level of Service 0.33 Sum of lost time (s) 50.5 Sum of lost time (s) 15 ICU Level of Service	Approach LOS		⋖			ш			В			⋖	
9.7 HCM 2000 Level of Service 0.33 Sum of lost time (s) 56.0% ICU Level of Service 15	Intersection Summary												
oscity ratio 0.33 n 50.5 Sum of lost time (s) zation 56.0% ICU Level of Service 15 15	HCM 2000 Control Delay			9.7	¥	CM 2000	Level of 5	Service		A			
50.5 Sum of lost time (s) zation 56.0% ICU Level of Service	HCM 2000 Volume to Capac	city ratio		0.33									
ilitzation 50,0% ICU Level of Service 15	Actuated Cycle Length (s)			50.5	ഗ്ഗ ⊆	ım of lost	time (s)			17.2			
	Analysis Dariod (min)	IIOII		30.0%	2	n revei c	oei vice			۵			
	Analysis reliou (IIIII)			2									

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Upper Kert Village (8124-01) Timings 3: Kerr Street & Speers Road

Lane Group		1	1	/	-	↓	4	•	←	•	۶	→	•
↑↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑↑ ↑	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
(c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	Lane Configurations	*	++	*	F	++	*	je.	*	*	F	*	*
yph) 90 770 100 195 570 165 115 370 325 150 158	Traffic Volume (vph)	6	770	100	195	220	165	105	115	370	325	150	105
Sample NA Perm pm+pt NA Perm Parm NA Perm pm+pt NA Perm Parm NA Perm NA Perm Parm NA Perm Parm Pa	Future Volume (vph)	6	770	100	195	220	165	105	115	370	325	٠.	105
Secondary Color	Turn Type	pm+pt	ΑN	Perm	pm+pt	¥	Perm	pm+pt	Ϋ́	Perm	pm+pt		Perm
S	Protected Phases	~	9		2	2		7	4		က	∞	
(s) 7.0 25.0 25.0 7.0 25.0 25.0 7.0 10.0 10.0 7.0 10.0 10.0 30.9 30.9 10.0 30.9 30.9 10.0 30.9 30.9 10.0 30.9 30.9 10.0 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 41.3 10.0 34.3 11.0 42.0 42.0 42.0 45.0 45.0 45.0 42.0 40.0 40.0 22.0 30.3 31.3 31.3 31.3 31.3 31.3 31.3 31	Permitted Phases	9		9	2		2	4		4	∞		∞
S	Detector Phase	~	9	9	2	2	2	7	4	4	က		∞
(s) 7.0 25.0 25.0 7.0 25.0 25.0 7.0 100 100 100 7.0 100 110 110 22.0 25.0 25.0 7.0 25.0 25.0 7.0 100 100 100 100 20.9 30.9 30.9 100 34.3 34.3 34.3 34.3 10.0 34.3 110 30.9 30.9 10.0 34.3 34.3 34.3 34.3 10.0 34.3 34.3 34.3 34.3 34.3 34.3 34.3 3	Switch Phase												
100 309 309 100 309 309 100 343	Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
110 420 420 420 450 450 450 410 400 240 240 230 420	Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
(s) 80 350% 350% 11.7% 37.5% 37.5% 92% 33.3% 20.0% 44.2% 42.2% 10.0 37.1 31.1 31.1 31.1 31.1 31.1 31.1 31.1	Total Split (s)	11.0	42.0	45.0	14.0	45.0	45.0	11.0	40.0	40.0	24.0	53.0	53.0
(s) 80 36.1 36.1 11.0 39.1 39.1 8.0 33.7 33.7 21.0 46.7 36.1 30.0 2.2 2.2 0.0 2.2 0.0 3.0 3.3 3.3 3.0 3.3 (s) 3.0 0.0 2.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Total Split (%)	9.2%	32.0%	32.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
(s) 3.0 3.7 3.7 3.0 3.7 3.7 3.0 3.3 3.3 3.3 3.3 3.3 3.3 (s) (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7	33.7	21.0	46.7	46.7
(s) 0.0 2.2 2.2 0.0 2.2 2.2 0.0 3.0 3.0 3.0 0.0 3.0 (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
30 5.9 5.9 3.0 5.9 5.9 3.0 6.3 6.3 6.3 8.0 6.3 8.1 lead Lag	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lead Leag Lead	Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Yes Yes <td>Lead/Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td> <td>Lead</td> <td>Lag</td> <td>Lag</td>	Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
25 55 55 55 55 55 55 55 40 40 25 40 80 80 80 80 80 80 80 80 80 80 80 80 80	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
s) 30 30 30 30 30 30 30 30 30 30 30 30 30	Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
None C-Min C-Min None C-Min C-Min None None None None None 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
14,0 14,0 14,0 14,0 14,0 14,0 14,0 14,0	Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
15 15 15 15 35 35	Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Intersection Summary	Pedestrian Calls (#/hr)		15	15		15	15		35	35		35	35
	Intersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Offset 43 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

₩ ↑ Ø7 🗣 Ø8 € Ø5 • € Ø6 (R)

Synchro 11 Report Page 5 Without Kerr St Improvements BA Group - EFS

Queues 3: Kerr Street & Speers Road

550 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0 - 0												
	1	†	~	>	↓	4	•	←	*	۶	→	*
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	105	895	116	227	663	192	122	134	430	378	174	122
v/c Ratio	0.28	0.78	0.21	0.72	0.48	0.27	0.33	0.35	06:0	69.0	0.30	0.22
Control Delay	17.7	37.8	2.7	35.2	29.8	5.1	22.7	41.2	42.5	31.1	31.0	5.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.6	0.0	0.0
Total Delay	17.7	37.8	5.7	35.2	29.8	5.1	22.7	41.2	42.5	33.8	31.0	5.2
Queue Length 50th (m)	9.5	111.0	1.5	29.8	62.3	0.0	16.7	26.7	47.8	9.19	30.2	0.0
Queue Length 95th (m)	19.4	130.2	7.9	#74.1	82.5	13.6	24.1	39.1	75.8	73.7	41.5	10.3
Internal Link Dist (m)		145.3			474.4			103.4			143.2	
Turn Bay Length (m)	105.0		75.0	75.0		100.0	20.0		45.0	80.0		75.0
Base Capacity (vph)	377	1144	295	316	1390	718	376	217	268	549	718	662
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	\$	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	_
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.08	0.70	0.01	0.70	0.18	0.07	0.32	96.0	0.76	0.81	100	0 18

Intersection Summary

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

Queue shown is maximum after two cycles.

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

Movement Lane Configurations Traffic Volume (vph) Future Volume (vph)	BB	EBI W	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl)	J	**	٧			ŀ						
Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl)			_		*	*	F	*	×	×	*	×
Future Volume (vph) Ideal Flow (vphpl)	8	0//	100	195	220	165	105	115	370	325	150	105
ideal Flow (vphpl)	90	770	100	195	220	165	105	115	370	325	150	105
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
l otal Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	1.00	0.95	1.00	1:00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1:00	1:00	96.0	1.00	1.00	0.93	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1:00	1.00	1.00	0.98	1.00	1.00	0.98	1.00	1.00
FT	1.00	1:00	0.85	1:00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
FIt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1799	3378	1437	1687	3438	1495	1674	1844	1429	1677	1845	1511
FIt Permitted	0.37	1.00	1.00	0.13	1.00	1.00	0.65	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	694	3378	1437	238	3438	1495	1141	1844	1429	666	1845	1511
Peak-hour factor, PHF	98.0	98.0	98.0	98.0	98.0	98.0	0.86	98.0	98.0	98.0	98.0	0.86
Adj. Flow (vph)	105	895	116	227	663	192	122	134	430	378	174	122
RTOR Reduction (vph)	0	0	9/	0	0	114	0	0	185	0	0	84
Lane Group Flow (vph)	105	895	40	227	663	78	122	73	245	378	174	38
Confl. Peds. (#/hr)	15		9	9		15	8		32	32		20
Heavy Vehicles (%)	%0	%9	%/	%/	2%	4%	%9	1%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	4	0	0	0	0	0	5	0	0	0	0
Turn Type	pm+pt	A	Perm	pm+pt	A	Perm	pm+pt	A	Perm	pm+pt	¥	Perm
Protected Phases	_	9		2	2		7	4		က	80	
Permitted Phases	9		9	2		2	4		4	∞		∞
Actuated Green, G (s)	48.7	40.6	40.6	9.69	48.5	48.5	32.5	24.7	24.7	48.2	37.4	37.4
Effective Green, g (s)	48.7	40.6	40.6	9.69	48.5	48.5	32.5	24.7	24.7	48.2	37.4	37.4
Actuated g/C Ratio	0.41	0.34	0.34	0.50	0.40	0.40	0.27	0.21	0.21	0.40	0.31	0.31
Clearance Time (s)	3.0	5.0	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	326	1142	486	311	1389	604	343	379	294	217	575	470
v/s Ratio Prot	0.02	c0.26		c0.10	0.19		0.02	0.07		c0.12	0.09	
v/s Ratio Perm	0.10		0.03	0.27		0.05	0.07		c0.17	0.17		0.03
v/c Ratio	0.29	0.78	0.08	0.73	0.48	0.13	0.36	0.35	0.83	0.73	0.30	0.08
Uniform Delay, d1	22.6	35.7	27.0	22.0	26.4	22.5	34.4	40.8	45.7	27.9	31.4	29.5
Progression Factor	0.89	0.87	0.84	1:00	1:00	1.00	1:00	1:00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	5.2	0.3	7.8	1.2	0.4	0.5	0.8	18.7	2.0	0.4	0.1
Delay (s)	20.4	36.2	23.0	29.8	27.6	22.9	34.9	41.6	64.3	32.9	31.8	29.3
Level of Service	ပ	Ω	ပ	ပ	ပ	ပ	ပ	□	ш	ပ	ပ	O
Approach Delay (s)		33.4			27.2			54.7			32.0	
Approach LOS		O			O			۵			O	
Intersection Summary												
HCM 2000 Control Delay			35.3		HCM 2000 Level of Service	Level of	Service		۵			
HCM 2000 Volume to Capacity ratio	/ ratio		0.78									
Actuated Cyde Length (s)			120.0	Su	Sum of lost time (s)	time (s)			18.2			
Intersection Capacity Utilization	_		81.6%	<u>o</u>	ICU Level of Service	of Service			۵			
Analysis Period (min)			15									

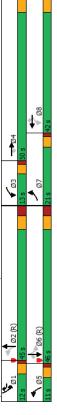
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Future Total AM (Phase 2) Upper Kerr Village (8124-01) Timings 4: Dorval Road & Speers Road

	1	†	/	-	↓	4	•	—	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	<u> </u>	‡	*	<i>y</i> -	‡	¥C	<u></u>	₩	<i>y</i>	‡	¥c_	
Traffic Volume (vph)	415	605	40	80	410	315	20	860	280	545	255	
Future Volume (vph)	415	902	40	80	410	315	70	860	280	545	255	
Turn Type	Prot	Ϋ́	Perm	pm+pt	₹	vo+mq	pm+pt	≨	pm+pt	Ϋ́	Perm	
Protected Phases	7	4		က	∞	-	2	2	_	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	~	2	2	Ψ	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	21.0	20.0	20.0		45.0		11.0	45.0		46.0	46.0	
Total Split (%)	17.5%	41.7%	41.7%	~	35.0%	10	9.5%	37.5%	9	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0		35.0		7.0	38.0		39.0	39.0	
Yellow Time (s)	3.0	4.0	4.0		4.0		3.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0		3.0		1.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		7.0	7.0	
Lead/Lag	Lead	Lag	Lag		Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	2.0	2.0		2.0		3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0		3.0		3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120	_											
Offset: 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	ed to phase	2:NBTL	and 6:SB	TL, Start o	of Green							
Natural Cycle: 135												
Control Type: Actuated-Coordinated	ordinated											

Splits and Phases: 4: Dorval Road & Speers Road



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Queues 4: Dorval Road & Speers Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

(Phase 2) lage (8124-01)

	•	†	>	>	ļ	4	•	—	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	451	658	43	87	446	342	9/	1076	304	592	277
v/c Ratio	0.94	0.70	0.09	0.35	0.65	0.54	0.20	0.97	0.98	0.40	0.37
Control Delay	79.4	42.4	0.3	27.9	52.2	12.1	18.1	9.09	71.8	10.6	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.4	42.4	0.3	27.9	52.2	12.1	18.1	9.09	71.8	10.6	3.1
Queue Length 50th (m)	54.8	74.3	0.0	6.9	55.9	43.2	8.5	129.7	37.1	38.9	10.9
Queue Length 95th (m)	#85.1	83.0	0:0	17.7	75.4	63.4	19.6	#174.3 m#143.3	#143.3	46.8	m15.0
Internal Link Dist (m)		412.3			472.1			621.6		494.4	
Turn Bay Length (m)	0.09		0.09	85.0		92.0	70.0		110.0		
Base Capacity (vph)	481	1192	009	256	949	639	387	1111	311	1483	754
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.55	0.07	0.34	0.47	0.54	0.20	0.97	0.98	0.40	0.37

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

m Volume for 95th percentile queue is metered by upstream signal.

Movement Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphp) Total Lost time (s) Lane Util. Factor	표		>	-	Ļ	1	•	—	•	۶	-
Lane Configurations Traffic Volume (vph) Futura Volume (vph) Ideal Flow (vphg) Total Lost fime (s) Lane Util: Factor	ונטו	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphpl) Total Lost time (s) Lane Util: Factor	ř.	‡	¥	*	‡	*	je-	₹		<i>y-</i>	*
Future Volume (vph) Ideal Flow (vphpl) Total Lost time (s) Lane Util. Factor	415	909	40	80	410	315	02	860	130	280	545
ideal Flow (vphpl) Total Lost time (s) Lane Util. Factor	415	605	40	8	410	315	20	860	130	280	545
lotal Lost time (s) Lane Util. Factor	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Utill. Factor	4.0	0.7	0.7	4.0	0.7	4.0	4.0	0.7		4.0	0.7
T	0.97	0.95	1.00	1.00	0.95	00.1	1.00	0.95		1.00	S. 5
Fipb, ped/bikes	8.5	00.1	00.1	9.0	00.1	0.99	00.1	0.1		00.1	3.5
Fipb, ped/bikes	8.6	00.1	0.00	8.0	3.6	0.85	0.10	00.1		90.1	3 5
Fit Protected	0.95	1.00	100	0.95	00.0	1.00	0.95	1.00		0.95	100.
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1785	3479		1687	3539
Flt Permitted	0.95	1.00	1.00	0.32	1.00	1.00	0.43	1.00		0.10	1.00
Satd. Flow (perm)	3400	3329	1482	261	3256	1494	802	3479		169	3539
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	658	43	87	446	342	92	935	141	304	592
RTOR Reduction (vph)	0	0	31	0	0	20	0	10	0	0	S
Lane Group Flow (vph)	421	658	12	87	446	272	9/	1066	0	304	292
Confl. Peds. (#/hr)	2 2	ò	ě	ě	9	2	2	ò	ò	i	ò
Heavy venicles (%)	ري م د	0%	% % C	% C	%OL	e c	<u></u>	%7	% 0	% 0	%7
Turn Tyne	Prot	AN	Parm	tu+mu	T AN	\0+wa	tu+mu	NAN		tu+mu	NAM
Protected Phases	_	4	5		00	-	2 10	2		-	9
Permitted Phases			4	- ∞	,	- ∞	2			9	
Actuated Green, G (s)	17.0	33.8	33.8	33.8	25.3	43.0	44.2	38.0		265	49.5
Effective Green, g (s)	17.0	33.8	33.8	33.8	25.3	43.0	44.2	38.0		29.7	49.5
Actuated g/C Ratio	0.14	0.28	0.28	0.28	0.21	0.36	0.37	0.32		0.50	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0
Venicle Extension (s)	3.0	0.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	1450
Lane GIP Cap (vpl)	12 4	0000	<u>-</u>	600	000	200	j 0	2 6		15 00	172
v/s Ratio Perm	3	02.00	0 0	0.00	<u>+</u>	0.0	0.0	5.		0.35	5
v/c Ratio	0.94	0.70	0.03	0.37	0.65	0.51	0.22	26.0		0.99	0.41
Uniform Delay, d1	51.0	38.6	31.2	32.8	43.3	30.2	25.0	40.4		36.9	24.9
Progression Factor	1.00	1.00	1.00	1.13	1.12	69.0	1.00	1.00		0.99	0.38
Incremental Delay, d2	26.0	3.0	0.1	1.0	2.9	0.7	0.3	20.4		40.9	9.0
Delay (s)	6.97	41.6	31.3	38.1	51.4	21.6	25.3	8.09		77.5	10.0
Level of Service	ш	۵	ပ	۵	۵	ပ	ပ	ш		ш	m
Approach Delay (s)		22.1			38.4			58.5			28.5
Approach LOS		ш						Ш			O
Intersection Summary											
HCM 2000 Control Delay	ratio		45.5	Ĭ	SM 2000	HCM 2000 Level of Service	Service		Ω		
Actuated Ovela Landth (s)	l allo		120.0	Ū	Sum of lost time (s)	time (c)			000		
Intersection Capacity Utilization	_		87.7%	3 0	III evel	IGLI I evel of Service			7.77 L		
Analysis Period (min)			15	2		3			1		

49.5 49.5 0.41 7.0 5.0 5.8

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Without Kerr St Improvements BA Group - EFS

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Timings Future Total AM (Phase 2) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

Lane Group EBL EBT WBT NBR SBL SBT	o. o.:) tagacamo pinto a oboso in o	5		500				, , ,
includes		1	†	ţ	•	۶	→	
integral (yph) 30 875 785 20 80 (yph) 30 875 785 20 80 80 875 785 20 80 80 875 785 20 80 80 875 785 20 80 80 875 785 20 80 80 875 785 20 80 80 875 785 20 80 80 875 785 20 80 80 80 875 785 20 80 80 80 80 80 80 80 80 80 80 80 80 80	Lane Group	EBF	EBT	WBT	NBR	SBL	SBT	
(vph) 30 875 785 20 80 (vph) 30 875 785 20 80 (vph) 30 875 785 20 80 80 80 80 80 80 80 80 80 80 80 80 80	Lane Configurations	*	₩.	₩	*	je-	¢\$	
(vph) 30 875 785 20 80 ses 4 4 8 2 6 a 4 4 8 2 6 a 5 4 4 8 2 6 a 6 5 5 5 5 5 5 5 5 6 (s) 239 239 239 243 243 (s) 239 239 239 243 243 (s) 239 239 239 243 243 (s) 239 239 239 343 343 (s) 2 2 2 2 32 31 33 (s) 37 761 761 761 317 317 317 (s) 37 37 37 37 37 37 31 (s) 37 37 37 37 37 37 31 (s) 60 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Traffic Volume (vph)	8	875	785	20	8	0	
ses	Future Volume (vph)	8	875	785	20	8	0	
ses 4 8 2 6 ses 4 4 8 2 6 ses 4 4 8 2 6 ses 4 4 4 8 2 6 ses 4 4 4 8 2 6 ses 6 50 50 50 50 ses 6 50	Turn Type	Perm	ΑN	Ϋ́	Perm	Perm	ΑN	
See 4	Protected Phases		4	∞			9	
(s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Permitted Phases	4			2	9		
(s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 (s) 23.9 23.9 24.3 24.3 24.3 24.3 24.3 24.3 24.3 24.3	Detector Phase	4	4	∞	7	9	9	
(s) 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Switch Phase							
(s) 23.9 23.9 24.3 24.3 24.3 and (s) 68.3% 68.3% 68.3% 137% 317% 317% 317% 31.3% 13.3 and (s) 76.1 76.1 76.1 31.7 31.3 and (s) 76.1 76.1 76.1 31.7 31.3 and (s) 2.2 2.2 and (s) 2.2 2.2 and (s) 2.6 3 6.3 and (s) 2.6 3 6.3 and (s) 2.6 3 6.3 and (s) 3.0 and (s)	Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
82.0 82.0 82.0 83.0 88.0 88.0 88.0 88.0 88.0 88.0 88	Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
nn (s) 761 761 761 761 7761 7761 7761 7761 77	Total Split (s)	82.0	82.0	82.0	38.0	38.0	38.0	
n (s) 76.1 76.1 76.1 31.7 31.7 31.7 31.7 31.7 31.7 31.7 31	Total Split (%)	%8.3%	68.3%	%8.3%	31.7%	31.7%	31.7%	
	Maximum Green (s)	76.1	76.1	76.1	31.7	31.7	31.7	
	Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
	All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
2	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
	Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
	Lead/Lag							
	Lead-Lag Optimize?							
	Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
	Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
	Recall Mode	C-Min	S Min	C-Min	None	None	None	
	Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Pedestrian Calls (#/nx) 0 0 0 Intersection Summary 0 0 0 Cycle Length: 120 4 0 0 Actualed Cycle Length: 120 0 0 0 Offset 51 (43%, Referenced to phase 4:EBTL and 8:WBT, Start of Green 0 0 Natural Cycle: 50 Control Type: Actualed-Coordinated 0	Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Intersection Summary Cycle Length: 120 Actualed Cycle Length: 120 Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 50 Control Type: Actualed-Coordinated	Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Cycle Length: 120 Actuared Cycle Length: 120 Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 50 Control Type: Actualed-Coordinated	Intersection Summary							
Actuated Cycle Length: 120 Natural Cycles 54, Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycles 50 Control Types Actuated-Coordinated	Cycle Length: 120							
Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green Natural Cycle: 50 Control Type: Actuated-Coordinated	Actuated Cycle Length: 120							
Natural Cycle: 50 Control Type: Actuated-Coordinated	Offset 51 (43%), Reference	ed to phase	4:EBTL a	Ind 8:WB	r, Start of	Green		
Control Type: Actuated-Coordinated	Natural Cycle: 50							
	Control Type: Actuated-Coo	ordinated						

Splits and Phases: 5: St. Augustine Drive & Speers Road



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Queues 5: St. Augustine Drive & Speers Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

	SBT	63	21	.5	0:0	1.5	0:0	0.0	93.6		550	0	0	0	0.11	
→	SBL SI						20.8		6		476 5	0	0	0	0.19 0.	
•	NBR	23	60.0	9.0	0.0	9.0	0.0	0.0			512	0	0	0	0.04	
Ļ	WBT	868	0.33	5.2	0.0	5.2	20.0	48.2	42.5		2758	0	0	0	0.33	
†	EBT	1011	0.37	2.1	0.0	2.1	15.0	m21.8	472.1		2754	0	0	0	0.37	
1	EBL	8	0.07	2.1	0.0	2.1	0.8	m1.6		20.0	469	0	0	0	0.07	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Upper Kert Village (8124-01) HCM Signalized Intersection Capacity Analysis 5: St. Augustine Drive & Speers Road

Movement EB1 EB1 EB1 WB1 WB1 WB1 NB1 NB1 NB1 SB1 SB1 SB1 SB1 SB1 SB1 SB1 Land Conjudaciloris Table Conjudaciloris Table Conjudaciloris Table Table Conjudaciloris Table Tabl		1	†	~	\	↓	1	•	←	•	۶	-	*
100 100	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
1900 1900	Lane Configurations	-	₹			₹				*-	-	2	
190 190	Traffic Volume (vph)	99	875	15	0	785	2	0	0	20	80	0	55
1900 1900	Future Volume (vph)	8	875	5	0	782	2	0	0	20	8	0	22
1.00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00	l otal Lost time (s)	D. C.	y. C. C.			y. C. C.				5.0	5.0	5.0	
1.00	Lane Util. Factor	0.1	0.95			0.95				1.00	1.00	1.00	
1.00	Frpb, ped/bikes	0.0	9.1			0.1				1.00	1.00	1.00	
1.00	Flpb, ped/bikes	00.1	0.1			1.00				1.00	1.00	1.00	
100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 100 0.95 0	Frt	9.1	9:1			9.5				0.86	1:00	0.85	
1797 3430	Fit Protected	0.95	1.00			1.00				1.00	0.95	1.00	
He	Satd. Flow (prot)	1797	3430			3434				1565	1805	1615	
He 10.88 0.88 0.88 0.88 0.88 0.88 0.88 0.8	FIt Permitted	0.31	1.00			1.00				1.00	0.95	1.00	
HF 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0.8	Satd. Flow (perm)	584	3430			3434				1565	1805	1615	
ph) 34 994 17 0 892 6 0 0 23 91 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
ph) 0 1 1 0 0 0 0 0 0 21 0 57 ph) 34 1010 0 0 888 0 0 0 0 2 91 6 5 5 5 5 5 6 0 0 0 0 2 91 6 6 8 9 6 0 0 0 0 2 91 6 8 9 6 9 6 9 6 9 6 9 9 9 9 9 4 4 8 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 8 9 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 8 9 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 8 9 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 8 9 9 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 8 9 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 9 6 4 8 9 9 0 80 0 80 0 0 80 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	怒	994	17	0	892	9	0	0	23	91	0	62
ph) 34 1010 0 0 898 0 0 0 2 91 6 6 9 6 9 5 5 5 5 5 5 5 5 5 6 0 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RTOR Reduction (vph)	0	_	0	0	0	0	0	0	21	0	22	0
5 5 5 5 6 6 6 7	Lane Group Flow (vph)	ষ্ক	1010	0	0	868	0	0	0	2	91	9	0
0% 5% 0% 6% 6% 0% 6% 0%<	Confl. Peds. (#/hr)	2		S	2		2						
Perm NA NA Perm Perm Perm A	Heavy Vehicles (%)	%0	2%	%0	%0	2%	2%	%0	%0	2%	%0	%0	%0
(s) 96.4 96.4 96.4 11.4 11.4 11.4 s) 96.4 96.4 96.4 11.4 11.4 11.4 s) 96.4 96.4 96.4 11.4 11.4 11.4 s) 96.4 96.4 96.4 96.4 11.4 11.4 11.4 11.4 0.80 0.80 0.80 0.80 0.10 0.10 0.10 0.20 0.20 0.20 0.26 0.26 0.26 0.26 0.2	Turn Type	Perm	A			AA				Perm	Perm	¥	
S	Protected Phases		4			∞						9	
(s) 964 964 964 11.4 11.4 11.4 s) 964 964 964 11.4 11.4 s) 964 964 964 11.4 s) 964 964 964 11.4 s) 964 964 964 964 11.4 s) 965 965 964 964 11.4 s) 965 965 964 11.4 s) 965 965 965 965 965 965 965 965 965 965	Permitted Phases	4								2	9		
1,000 1,00	Actuated Green, G (s)	96.4	96.4			96.4				11.4	11.4	11.4	
0.80 0.80 0.80 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.20 0.26 0.26 0.26 0.10 0.10 0.25 0.26 0.26 0.10 0.10 0.25	Effective Green, g (s)	96.4	96.4			96.4				11.4	11.4	11.4	
59 59 59 59 6.3 6.3 6.3 50 30 30 30 30 30 30 30 30 30 40 50 755 7258 148 171 0.06	Actuated g/C Ratio	0.80	0.80			0.80				0.10	0.10	0.10	
10 469 2755 2758 148 171 0.06 0.07 0.37 0.33 0.01 0.53 0.07 0.37 0.33 0.01 0.53 0.07 0.37 0.33 0.01 0.53 0.07 0.37 0.33 0.01 0.53 0.07 0.52 1.44 49.2 51.8 0.02 0.02 0.03 0.03 0.0 3.2 1.7 2.0 4.8 49.3 54.9 A A A A A A A A A A B A B B B B B B B	Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
1	Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
Color Colo	Lane Grp Cap (vph)	469	2755			2758				148	171	153	
0.06 0.07 0.33 0.00 0.005 0.07 0.33 0.01 0.053 0.52 0.52 0.52 1.44 1.00 1.00 0.52 0.52 0.3 0.3 0.0 0.005 1.7 2.0 4.8 49.3 54.9 A	v/s Ratio Prot		c0.29			0.26						0.00	
0.07 0.37 0.33 0.01 0.53 2.5 3.3 3.1 0.34 0.2 0.2 0.3 0.3 0.3 0.0 0.0 0.5 0.2 0.2 0.3 0.3 0.3 0.0 3.2 1.7 2.0 4.8 4.9 49.3 54.9 A A A A A A A B 49.3 54.9 NW TO Capacity ratio 0.38 gft (s) 1200 Sum of lost time (s) 12.2 gft (s) 1500 Sum of Service A B A B A B A B A B A B A B A B A B A	v/s Ratio Perm	90.0								0.00	c0.05		
25 3.3 3.1 49.2 518 0.62 0.52 1.44 1.00 1.00 1.7 2.0 4.8 49.3 64.3 54.9 A A A A A A A A A B No A A A A A A A A A B No Belay 7.4 HCM 2000 Level of Service A D 1.00 0.38 7.4 HCM 2000 Level of Service A D 1.00 0.38 12.2 A A A B No Utilization 1.20 Sum of lost time (s) 12.2 A A B 1.2 A B A B B B B B B B B B B B B B B B B	v/c Ratio	0.07	0.37			0.33				0.01	0.53	0.04	
1,44 1,00	Uniform Delay, d1	2.5	3.3			3.1				49.2	51.8	49.3	
d2 0.2 0.3 0.3 0.0 3.2 1.7 2.0 4.8 49.3 54.9 D <td>Progression Factor</td> <td>0.62</td> <td>0.52</td> <td></td> <td></td> <td>4.</td> <td></td> <td></td> <td></td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td></td>	Progression Factor	0.62	0.52			4.				1.00	1.00	1.00	
1.7 2.0 4.8 49.3 54.9 A A A A A A A A A A A A A A A A A A A	Incremental Delay, d2	0.2	0.3			0.3				0.0	3.2	0.1	
A A A A A A A A A A B D D D C C C C C C C C C C C C C C C C	Delay (s)	1.7	2.0			4.8				49.3	54.9	49.4	
2.0 4.8 49.3 A A D A B A Delay TO Belay TO B TO	Level of Service	∢	∢			⋖				Δ	۵	۵	
A A D D 7.4 HCM 2000 Level of Senice A A 0.38 Sum of lost time (s) 12.2 48.7% ICU Level of Senice A 15.7	Approach Delay (s)		2.0			4.8			49.3			52.7	
7.4 HCM 2000 Level of Service 0.38 120.0 Sum of lost time (s) 48.7% ICU Level of Service 15	Approach LOS		V			∢			٥				
7.4 HCM 2000 Level of Service 0.38 1200 Sum of lost time (s) 48.7% ICU Level of Service 15	Intersection Summary												
0.38 120 Sum of lost time (s) 48.7% (CU Level of Service 15	HCM 2000 Control Delay			7.4	Ĭ	0000 M	P Jo laya	anvina		٨			
120.0 Sum of lost time (s) 48.7% ICU Level of Service 15	HCM 2000 Volume to Canac	ity ratio		0.38	ĺ	7INI 2000	רמים ה	DGI NICO		c			
48.7% ICU Level of Service 15	Actuated Cycle Length (s)	e de la composition della comp		120.0	Ö	m of lost	time (s)			12.2			
15	Intersection Capacity Utilizati	ion		48.7%	೦	U Level o	of Service			⋖			
	Analysis Period (min)			15									

c Critical Lane Group

Without Kerr St Improvements BA Group - EFS

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Timings 6: Speers Road/Comwall Road & Cross Avenue

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

`	SBR	N/N	245	245	Perm		4	4		10.0	15.8	31.0	22.1%	25.2	3.3	2.5	0.0	5.8			3.0	3.0	0:0	0.0	None							Green		
٠	SBL	<i>y</i> -	2	2	Prot	4		4				31.0		25.2	3.3	2.5	0.0	2.8			3.0	3.0	0.0	0.0	None							3T, Start of		
ļ	WBT	₩	615	615	Ϋ́	9		9		38.0	47.6	74.0	52.9%	67.4	3.7	2.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				and 6:WE		
†	EBT	‡	1255	1255	NA	2		2		38.0	47.6	109.0	%6.77	102.4	3.7	2.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2				3 2:EBTL		
1	EBL	#	205	202	pm+pt	5	2	5		0.9	12.0	35.0	25.0%	29.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None						40	nced to phase		oordinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140	Actuated Cycle Length: 140	Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	Natural Cycle: 80	Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue

₹ Ø2 (R) 109 S



Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2	Upper Kerr Village (8124-0
Queues	6: Speers Road/Cornwall Road & Cross Avenue

Queues 6: Speers Road/Cornwall Road & Cross Avenue	wall R	oad &	Cross	Avenu		Future Total AM (Phase 2) Upper Kerr Village (8124-01)
	4	†	ţ	٠	*	
Lane Group	田田	E	WBT	SBL	SBR	
Lane Group Flow (vph)	241	1476	748	9	288	
v/c Ratio	0.42	0.51	0.30	0.02	0.63	
Control Delay	4.4	4.0	7.3	9.09	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	4.4	4.0	7.3	9.09	12.9	
Queue Length 50th (m)	9.4	46.8	33.8	1.6	0.0	
Queue Length 95th (m)	14.5	55.7	44.0	2.7	11.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	723	2905	2501	324	705	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.33	0.51	0.30	0.02	0.41	
Informaction Cummons						

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

WBR SBL SBR 20 5 245 20 5 245 20 1900 1900 1900 1900 1900 100 100 100 100 100 0.85 24 6 288 24 6 288 24 6 288 24 6 288 24 6 288 24 6 288 24 6 288 30 30 104 104 104 104 107 0.07 5.8 5.8 5.8 3.0 3.0 0.00 0.00 0.00 0.00 0.00 0.00 0	tions								
(vph) 225 1255 615 20 5 245 (vph) 205 1250 1900 1900 1900 1900 1900 1900 1900 19	(vph) 205 1255 615 20 5 245 (vph) 206 1255 615 20 5 245 (vph) 206 1900 1900 1900 1900 1900 1900 1900 19	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
(yph) 205 1255 615 20 5 245 (yph) 1900 1900 1900 1900 1900 1900 1900 190	(yph) 205 1255 615 20 5 245 (yph) 205 1255 615 20 5 245 (yph) 300 1900 1900 1900 1900 1900 1900 1900	-ane Configurations	<i>y</i> -	‡	₩		F	N. M.	
(ych) 205 1255 615 20 5 245 yc) 60 6.6 6.6 6.8 x 100 0.95 0.95 1.00 0.88 x 100 1.00 1.00 1.00 1.00 x 100 1.00 1.00 1.00 1.00 x 100 1.00 1.00 1.00 1.00 x 100 1.00 1.00 1.00 0.85 x 100 1.00 0.85 x 100 1.00 1.00 0.85 x 100 1.00 0.00 x 100 0.00	(ych) 100 1255 615 20 5 245 (ych) 60 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Traffic Volume (vph)	202	1255	615	20	2	245	
(s) 6 6 6 6 5 8 8 90 1900 1900 1900 1900 1900 1900 19	(s) 6 (6 6 6 6 70) (s) 6 (100 1900 1900 1900 1900 (s) 6 (6 6 6 6 70) (s) 7 (100 0.95 0.95 0.95 100 0.88 (s) 100 1.00 1.00 1.00 0.85 (s) 100 1.00 1.00 1.00 0.85 (s) 100 1.00 0.95 1.00 (s) 100 1.00	-uture Volume (vph)	202	1255	615	50	2	245	
(s) 6.0 6.6 6.6 5.8 5.8 5.8 1.0 21 1.00 1.05 1.00 1.00 1.00 1.00 1.00 1.0	(s) 6.0 6.6 6.6 5.8 5.8 5.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
av (ph) 100 0.95 0.95 1.00 0.88 100 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	and (vph) 100 0.95 0.95 1.00 0.88 1.00 1.00 1.00 1.00 1.00 1.00	Total Lost time (s)	0.9	9.9	9.9		2.8	5.8	
the color of the c	s 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	ane Util. Factor	0.0	0.95	0.95		1.00	0.88	
(c) 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	100 100 100 100 100 100 100 100 100 100	-rpb, ped/bikes	1:00	1.00	1.00		1.00	1.00	
(c) 1.00 1.00 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0	(c) 100 100 0.85 (d) 1686 347 3450 1805 2608 (e) 1686 347 3450 1805 2608 (e) 1686 347 3450 1805 2608 (f) 1686 347 3450 1805 2608 (g) 341 3476 724 24 6 288 (g) 172 172 724 24 6 288 (g) 172 172 172 0 0 267 (g) 172 172 1015 104 104 (g) 24 172 172 1015 104 104 (g) 25 20 2007 007 (g) 26 6 6 6 6 6 5 8 58 (g) 6 0 6 6 6 6 6 5 8 58 (g) 6 0 6 6 6 6 6 5 8 58 (g) 172 172 1015 104 104 (g) 35 50 50 30 007 (g) 203 0.43 0.22 0.00 (g) 203 0.43 0.22 0.00 (g) 204 0.51 0.30 0.04 0.11 (g) 38 7.1 60.3 60.7 (g) 38 7.1 60.3 60.7 (g) 38 7.1 60.7 (g) 100 100 100 100 100 100 (g) 38 7.1 60.7 (g) 38 7.1 60.7 (g) 38 7.1 60.7 (g) 1400 1400 1400 1400 1400 (g) 26 0.5 (g) 26 0.5 (g) 38 7.1 60.7 (g) 1400 1400 1400 1400 1400 1400 1400 140	-lpb, ped/bikes	0.0	1.00	1.00		1.00	1.00	
th (166 2 1,00 1,00 0,95 1,00 1,00 0,95 1,00 0,93 1,00 1,00 0,95 1,00 0,93 1,00 1,00 0,95 1,00 0,93 1,00 1,00 1,00 0,95 1,00 0,93 1,00 1,00 1,00 0,95 1,00 0,93 1,00 1,00 1,00 0,95 1,00 0	th (1686) 100 0.95 1.00 0.95 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 1.00 0.93 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	Ψ.	0.F	1.00	3.5		0.1	0.85	
(b) 1886 3471 3450 1805 2608 m) 633 4100 1.00 1.00 1.00 m) 691 3471 3450 1805 2608 m) 71 PHF	(c) 1686 3471 3450 1805 2608 (c) 1807 2608 (-It Protected	0.95	1.00	1.00		0.95	1.00	
m) 633 1,00 1,00 6,95 1,00 m) 633 1,00 1,00 6,95 1,00 m, 64 1,00 1,00 6,95 1,00 m, 64 1,00 1,00 1,00 1,00 1,00 m, 64 1,00 1,00 1,00 1,00 1,00 m, 64 1,00 1,00 1,00 1,00 1,00 1,00 m, 65 1,00 1,00 1,00 1,00 1,00 1,00 m, 67 1,00 1,00 1,00 1,00 1,00 1,00 m, 68 1,00 1,00 1,00 1,00 1,00 1,00 m, 69 1,00 1,00 1,00 1,00 1,00 1,00 m, 60 1,00 1,00 1,00 1,00 1,00 m, 60 1,00 1,00 1,00 1,00 1,00 1,00 1,00 m, 60 1,00 1,00 1,00 1,00 1,00 1,00 1,00 m, 60 1,00 1,00 1,00 1,00 1,00 1,00 1,00 m, 60 1,00 1,00 1,00 1,00 1,00 1,00 1,00	m) 591 3100 1095 1000 m) 591 3471 3450 1095 1000 m) 691 3471 3450 1085 0.88 0.88 0.88 0.88 0.88 0.88 0.88 0	Satd. Flow (prot)	1686	3471	3450		1805	2608	
m) 591 3471 3450 1805 2608 n) (ph) 6 0.85 0.85 0.85 0.85 0.85 0.85 n) (vph) 241 1476 747 6 6 218 s (%) 7% 4% 4% 5% 0% 9% s (%) 7% 4% 4% 5% 0% 9% s (%) 7% 4% 4% 5% 0% 9% s (%) 172 172 101.5 10.4 10.4 s (%) 1172 117.2 101.5 10.4 10.4 s (%) 1172 117.2 101.5 10.4 10.4 s (%) 172 10.5 10.5 0.0 0.0 con (s) 3.5 5.0 5.0 3.0 3.0 con (s) 3.5 5.0 5.0 0.00 d1 2.8 3.2 6.8 6.8 6.8 6.8 d1 2.8 3.2 6.8 0.00 0.1 0.0 d2 0.4 0.41 0.4 10.4 s (s) 1.4 10.4 10.4 s (s) 1.4 10.5 10.4 10.4 s (s) 1.4 10.5 10.4 10.4 s (s) 1.4 10.5 10.4 10.4 d1 2.8 3.5 5.0 5.0 3.0 con (s) 3.5 5.0 5.0 0.00 d1 2.8 3.5 6.0 6.0.3 0.01 d2 0.4 0.41 6.0 1.00 d3 0.4 0.8 0.0 1.00 d4 0.3 0.4 0.1 100 d7 0.3 0.4 0.8 0.0 1.00 d8 0.8 0.8 0.8 0.0 1.00 d1 0.8 0.8 0.8 0.8 0.8 d1 0.8 0.8 0.8 0.8 0.8 d1 0.8 0.8 0.8 0.8 0.8 d1 0.9 0.8 0.9 0.0 1.00 mmany mmany mmany mmany mmany mmany mmany 10.7 HCM 2000 Level of Service mmany 10.7 HCM 2000 Level of Service mmany 10.7 HCM 2000 Level of Service mmany modiost time (s)	m) 591 3471 3450 1805 2608 nr PHF 0.65 0.85 0.85 0.85 0.85 0.85 nr (vph) 0 1 0 24 24 6 288 nr (vph) 241 1476 747 0 6 21 nr (vph) 5 4% 4% 5% 0% 9% st (%) 7% 4% 4% 5% 0% 9% st (%) 7% 4% 4% 5% 0% 9% st (%) 7% 4% 6% 6% 9% st (%) 1172 1172 101.5 10.4 10.4 n. (s) 10.8 6.6 6.6 6.8 5.8 5.8 lon (s) 3.5 5.0 5.0 0.0 lon (s) 3.5 5.0 5.0 0.0 lon (s) 3.5 5.0 6.0 0.0 lon (s) 3.5 5.0 6.0 0.0 lon (s) 3.5 5.0 6.0 0.0 lon (s) 4 3.8 7.1 60.3 60.7 mmary mmary mmary mmary mmary mmary mmary lon (s) 5.0 0.0 0.0 1.00 lon (s) 6.0 0.0 0.0 0.1 lon (s) 6.0 0.0 0.0 0.0 .0 lon (s) 6.0 0.0 0.0 0.0 0.0 lon (s) 6.0 0.0 0.0 0.0 0.0 0.0 lon (s) 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	-It Permitted	0.33	1.00	1.00		0.95	1.00	
by PHF 085 085 085 085 085 085 085 085 085 085	PHF 085 085 085 085 085 085 085 085 085 085	Satd. Flow (perm)	291	3471	3450		1805	2608	
mo(vph) 241 1476 724 24 6 288 w (vph) 241 1476 747 26 288 (%) 241 1476 747 6 21 http://www.pph.com/my.co	mor(ph) 241 1476 724 24 6 288 w (vph) 241 1476 747 0 0 267 w (vph) 241 1476 747 0 0 267 (%) 7% 4% 4% 5% 0% 9% ess 2 2 6 4 4 ess 2 5 6 6 6 6 5 8 58 ion (s) 35 50 50 0 07 007 ion (s) 35 50 50 0 00 ion (s) 35 6 0 6 6 6 6 5 8 58 ion (s) 36 0 6 6 6 6 6 5 8 58 ion (s) 37 0 003 2043 0.22 ion (s) 38 004 0.11 d1 28 8 602 601 ion 1.00 1.00 1.00 1.00 ion 1.00 1.00 1.00 1.00 ion 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.85	0.85	0.85	0.85	0.85	0.85	
) 0 0 1 0 0 267 5 4 1476 747 0 6 21 5 5 6 21 7% 4% 4% 5% 0% 9% 7 7% 4% 4% 5% 0% 9% 5 2 6 4 4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 10.1 10.4 10.4 1172 1172 10.1 10.4 10.4 1172 1172 10.1 10.4 10.4 0.84 0.84 0.72 0.07 0.07 6.0 6.6 6.8 5.8 5.8 5.8 5.0 5.0 5.0 0.07 0.07 0.03 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.01 0.01 0.32 0.04 0.11 0.43 0.7 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.6 0.3 0.0.7 R E E E E E E E E E E E E E E E E E E) 0 0 1 0 0 267) 241 1476 747 0 6 21 5 5 5 5 5 6 6 21 17% 4% 4% 5% 0% 9% Pm+pt NA NA Prot Perm 5 2 4 4 1172 1172 1015 104 104 1172 1172 1015 104 104 1172 1172 1015 104 104 1172 1172 1015 104 104 1172 1172 1015 104 104 1172 1172 1015 104 104 1172 1172 1015 104 104 1084 0.84 0.72 0.07 6.0 6.6 6.6 6.8 58 58 25 5 5 5 0 0 0 0.32 0.43 0.22 0.00 0.32 0.43 0.22 0.00 0.32 0.43 0.22 0.00 0.32 0.43 0.22 0.00 0.32 0.43 0.22 0.00 0.34 0.45 0.30 0.10 1.00 1.00 1.00 1.00 1.00 1.00 1	Adj. Flow (vph)	241	1476	724	24	9	288	
241 1476 747 0 6 21 5 4% 4% 5% 0% 9% 7% 4% 4% 5% 0% 9% 7% 4% 4% 5% 0% 9% 1172 1172 101.5 10.4 10.4 108 0.84 0.72 0.07 0.07 6.0 6 6 6 6 5 8 8 8 5.0 5.0 5.0 3.0 3.0 5.0 2805 2801 134 193 5.0 2805 2801 134 193 6.0 6 0.3 0.0 4 0.11 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.43 0.51 0.00 0.00 0.00 0.6 0.6 0.3 0.0 1 0.0 0.6 0.6 0.3 0.0 1 0.0 0.8 0.7 0.7 0.0 0.8 0.7 0.0 0.8 0.7 0.0 0.8 0.7 0.0 0.9 0.7 0.0 0.9 0.7 0.0 0.9 0.0 0.0 0.9 0.0 0.0 0.0	241 1476 747 0 6 21 5	RTOR Reduction (vph)	0	0	_	0	0	267	
7% 4% 5% 0% 9% pm+pt NA NA Prot Perm 5 2 4 4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 0.84 0.72 0.07 0.07 0.07 60 6.6 6.6 6.8 5.8 5.8 50 6.0 6.6 6.6 6.8 5.8 5.8 50 6.0 6.6 6.6 6.8 5.8 5.8 5.8 50 6.0 6.6 6.6 6.8 5.8 5.8 5.8 6.0 6.6 6.5 6.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	5 5 5 6 7 7% 4% 5% 0% 9% pm+pt NA A A A A 5 2 6 A A A A A 117 1172 101.5 10.4 <td>-ane Group Flow (vph)</td> <td>241</td> <td>1476</td> <td>747</td> <td>0</td> <td>9</td> <td>21</td> <td></td>	-ane Group Flow (vph)	241	1476	747	0	9	21	
pm+pt 7% 4% 5% 0% 9% pm+pt NA NA Prot Perm 2 6 4 4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 0.84 0.84 0.75 0.07 0.07 6.0 6.6 6.6 5.8 5.8 5.8 5.0 5.0 5.0 3.0 3.0 3.0 6.0 6.6 6.6 6.8 5.8 5.8 5.8 5.0 5.0 5.0 3.0 3.0 3.0 3.0 6.0 6.6 6.6 6.6 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 <t< td=""><td>pm+pt 4% 4% 5% 0% 9% pm+pt NA NA Prot Perm 5 6 4 4 4 1172 1172 1015 104 104 1172 1172 1015 104 104 084 072 007 007 60 6.6 6.6 5.8 5.8 50 6.0 6.6 6.6 5.8 5.8 50 6.0 6.6 6.6 5.8 5.8 5.8 50 6.0 6.6 6.6 5.8 5.8 5.8 5.8 50 6.0 6.6 6.6 6.6 6.0 6.0 6.0 0.3 0.4 0.2 0.0 0.0 0.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 <</td><td>Confl. Peds. (#/hr)</td><td>2</td><td></td><td></td><td>2</td><td></td><td></td><td></td></t<>	pm+pt 4% 4% 5% 0% 9% pm+pt NA NA Prot Perm 5 6 4 4 4 1172 1172 1015 104 104 1172 1172 1015 104 104 084 072 007 007 60 6.6 6.6 5.8 5.8 50 6.0 6.6 6.6 5.8 5.8 50 6.0 6.6 6.6 5.8 5.8 5.8 50 6.0 6.6 6.6 5.8 5.8 5.8 5.8 50 6.0 6.6 6.6 6.6 6.0 6.0 6.0 0.3 0.4 0.2 0.0 0.0 0.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 <	Confl. Peds. (#/hr)	2			2			
pm+pt NA NA Prot Perm 5 2 6 4 1 172 1772 101.5 10.4 10.4 1 172 1772 101.5 10.4 10.4 1 172 1772 101.5 10.4 10.4 1 172 1772 101.5 10.4 10.4 1 172 1772 101.5 10.4 10.4 1 172 1772 101.5 10.0 10.7 1 170 170 10.0 10.0 1 100 1.00 1.00 1.00 1 100 1.00 1.	pm+pt NA NA Prot Perm 5 2 6 4 4 4 4 5 2 6 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Heavy Vehicles (%)	%/	4%	4%	2%	%0	%6	
5 2 6 4 1172 1172 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 0.84 0.84 0.72 0.07 0.07 0.84 0.84 0.72 0.07 0.07 0.03 0.04 0.22 0.00 0.03 0.04 0.22 0.00 0.03 0.04 0.01 0.42 0.51 0.30 0.04 0.11 2.8 3.2 6.8 60.5 0.00 1.00 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 3.4 3.9 7.1 60.3 60.7 A A B E E A A A B E A A A B E A A A B E A A A B B A A B B B O 7 B	5 2 6 4 1172 1772 101.5 10.4 10.4 1172 1172 101.5 10.4 10.4 0.84 0.84 0.72 0.07 0.07 0.07 8.0 6.6 6.6 5.8 5.8 8.0 5.0 5.0 3.0 3.0 8.0 2905 2591 134 193 0.03 0.04 0.11 0.42 0.52 0.30 0.04 0.11 2.8 3.2 6.8 60.2 60.5 1.00 1.00 1.00 1.00 1.00 1.00 0.6 0.6 0.6 0.3 60.7 A A A A A B E E Capacity ratio 0.50 1(s) 140.0 Sum of lost time (s) 16	Turn Type	pm+pt	AA	NA		Prot	Perm	
1172 117.2 101.5 10.4 10.4 10.4 1172 117.2 101.5 10.4 10.4 10.4 10.4 10.4 10.4 10.8 10.8 10.8 10.8 10.8 10.8 10.8 10.8	1172 1172 1015 104 4 1172 1172 1015 104 104 1172 1172 1015 104 104 1084 0.84 0.72 0.07 0.07 156 6.6 6.6 5.8 5.8 156 6.6 6.6 5.8 5.8 1570 2905 2501 134 193 10.03 c0.43 0.22 0.00 10.04 0.13 0.00 10.0 1.00 1.00 1.00 1.00 10.0 1.00 1.0	Protected Phases	2	2	9		4		
1172 1172 101.5 10.4 10.4 10.4 10.4 10.4 10.4 10.4 10.4	1172 1172 1015 104 104 1172 1172 1015 104 104 084 072 005 007 6.0 6.6 6.6 5.8 5.8 5.8 5.8 3.5 5.0 5.0 3.0 3.0 0.03 2043 0.22 0.00 0.32 0.42 0.51 0.30 0.04 0.11 2.8 3.8 6.8 6.05 6.05 1.00 1.00 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 3.4 3.9 7.1 60.3 60.7 A A A B E Capacity ratio 0.50 1(s) 140.0 Sum of lost time (s) 18 1(s) 140.0 Sum of lost time (s) 18 14122410n 6.52% ICU Level of Service	Permitted Phases	2					4	
1172 1172 101.5 10.4 10.4 10.4 10.4 10.8 10.8 10.8 10.8 10.8 10.8 10.8 10.8	172 172 1015 104 104 084 084 072 007 60 66 66 68 58 58 570 2905 2501 134 193 0.03 c.043 0.22 0.00 0.32 0.04 0.22 0.00 0.32 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.44 0.51 0.30 0.04 0.11 0.56 0.6 0.3 0.1 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Actuated Green, G (s)	117.2	117.2	101.5		10.4	10.4	
0.84 0.84 0.72 0.07 0.07 0.07 0.06 0.06 0.06 0.06 0.07 0.07	0.84 0.84 0.72 0.07 0.07 1 5.0 6.6 6.6 5.8 5.8 1 5.0 5.0 3.0 3.0 1 0.03 2.905 2.901 134 193 0.03 0.043 0.22 0.00 0.32 0.041 0.20 0.42 0.00 1.00 1.00 1.00 1.00 1 0.0 1.00 1.0	Effective Green, g (s)	117.2	117.2	101.5		10.4	10.4	
on (s) 6.0 6.6 6.6 5.8 5.8 5.8 6.0 on (s) 2.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	6.0 6.6 6.6 5.8 5.8 3.5 5.0 5.0 5.0 3.0 3.5 2905 2501 134 193 0.03 c0.43 0.22 0.00 0.32 0.42 0.51 0.30 0.42 0.51 0.30 0.04 0.11 2.8 3.2 6.8 60.2 60.5 1.00 1.00 1.00 1.00 1.00 2.6 0.6 0.3 0.1 0.3 3.4 3.9 7.1 60.3 60.7 4 A A A A B E E Capacity ratio 0.50 Capacity ratio 0.50 0.50 Sum of lost time (s) 18 0.10 10.2 10.0 Level of Service 0.50 Sum of lost time (s) 18	Actuated g/C Ratio	0.84	0.84	0.72		0.07	0.07	
nn (s) 3.5 5.0 5.0 3.0 3.0	3.5	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
(ph) 570 2905 2561 134 193 0.32 20.43 0.22 0.00 0.001 0.32 0.42 0.51 0.30 0.01 d1 2.8 3.2 6.8 60.2 60.5 cbr 1.00 1.00 1.00 1.00 lay, d2 0.6 0.3 0.1 0.3 60.7 s A 3.9 7.1 60.3 60.7 60.7 s A A A E E E f(s) 3.8 7.1 60.7 F F f(s) 3.8 7.1 60.7 A F mmary A A A E E mmary A A A A B A metrol Delay 10.7 HCM 2000 Level of Service HCM 2000 Level of Service A B B	\$70 2905 2501 134 193 0.53 0.43 0.22 0.00 0.32 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.00 0.01 1.00 1.00 1.00 1.00 1.00 0.01 0.00 2 6.6 0.3 0.1 0.3 0.7 0.7 0.07 3 4 3.9 7.1 60.3 60.7 E E E A A A A A E E E A A A A E E E A A A A E E A A A A A E B A A A A A B B A A A A A A B B	/ehide Extension (s)	3.5	2.0	2.0		3.0	3.0	
0.03 c0.43 0.22 0.00 0.03 c0.42 0.22 0.00 0.42 0.51 0.30 0.04 0.11 0.42 0.51 0.30 0.04 0.11 0.45 0.5 0.5 0.3 0.1 0.3 0.5 0.6 0.3 0.1 0.3 0.7 0.5 0.5 0.5 0.3 0.7 0.7 HCM 2000 Level of Service 1.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.03	-ane Grp Cap (vph)	220	2905	2501		134	193	
0.32 cbr 0.34 cbr 0.35 cbr 0.3	0.32 0.42 0.51 0.32 0.42 0.51 0.30 0.04 0.100 0.	//s Ratio Prot	0.03	c0.43	0.22		0.00		
d1 0.42 0.51 0.30 0.04 0.11 d1 2.8 3.2 6.8 60.2 60.5 cbr 1.00 1.00 1.00 1.00 lay, d2 0.6 0.3 0.1 0.3 A A A E E E y (s) 3.8 7.1 60.7 mmary moreously ratio 0.50 trol Delay 10.7 HCM 2000 Level of Service length (s) 140.0 Sum of lost time (s)	0.42 0.51 0.30 0.04 0.11 2.8 3.2 6.8 60.5 60.5 1.00 1.00 1.00 1.00 1.00 0.6 0.6 0.3 0.1 0.3 60.7 A A A E E 3.8 7.1 60.3 60.7 A A A E Capacity ratio 0.50 Utilization 69.2% ICU Level of Service	//s Ratio Perm	0.32					c0.01	
d1 2.8 3.2 6.8 60.5 60.5 cdr	2.8 3.2 6.8 60.2 60.5 1.00 1.00 1.00 1.00 2.0.6 0.3 0.1 0.3 3.4 3.9 7.1 60.3 60.7 A A A E E E A A A E E C A A A E C A A A B A E C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C A B C C B C C B C C B C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C B C C C C	//c Ratio	0.42	0.51	0.30		0.04	0.11	
ctor 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Jniform Delay, d1	2.8	3.2	8.9		60.2	60.5	
lay, d2 0,6 0,6 0,3 0,1 0,3 a. 3,4 3,9 7,1 60,3 60,7 a. 4 A A E E E 7,8 3,8 7,1 60,7 7,1 60	2 0.6 0.6 0.3 0.1 0.3 3.4 3.9 7.1 60.3 60.7 A A A B E E A 3.8 7.1 60.7 A A A B E Copacity ratio 0.50 Utilization 69.2% ICU Level of Service	Progression Factor	1:00	1.00	1:00		1:00	1.00	
3.4 3.9 7.1 60.3 60.7 y (s) A A A E E y (s) 3.8 7.1 60.7 A A A E mmary tro Delay 10.7 HCM 2000 Level of Service ment of Capacity ratio 0.50 Length (s) 140.0 Sum of lost time (s)	34 3.9 7.1 60.3 60.7 A A A E E E E E Capacity ratio 0.50 Utilization 69.2% 10.7 HOM 2000 Level of Service 1.40.0 Utilization 69.2% 10.8 140.0 Sum of lost time (s) 18	ncremental Delay, d2	9.0	9.0	0.3		0.1	0.3	
y (s) A A E E E y (s) 3.8 7.1 60.7 min and y men to Delay 10.7 HCM 2000 Level of Service 0.50 Length (s) 140.0 Sum of lost time (s)	A A B E E 3.8 7.1 60.7 A A A E Consideration 0.50 Utilization 69.2% A A A C Capacity ratio 0.50 Utilization 69.2% I.CU Level of Service 18	Jelay (s)	3.4	3.9	7.1		60.3	2.09	
(s) 3.8 7.1 60.7 Minary Tot Delay Tot Delay Tot Deposity ratio 0.50 Length (s) 10.7 HCM 2000 Level of Service 0.50 Length (s)	3.8 7.1 60.7 A A E (A A E (A A E (A A O E E (A A O C C C C C C C C C C C C C C C C C	evel of Service	V	<	∢		ш	ш	
A A E mmary trol Delay 10.7 HCM 2000 Level of Service 10.0 S0 Sum of lost time (s) Length (s) 140.0 Sum of lost time (s)	A A E aby table 10.7 HOM 2000 Level of Service Capacity ratio 0.50 Sum of lost time (s) 140.0 Sum of lost time (s) 18 Utilization 69.2% ICU Level of Service	Approach Delay (s)		3.8	7.1		2.09		
10.7 HCM 2000 Level of Service 0.50 Sum of lost time (s)	HCM 2000 Level of Service Capacity ratio 0.50 Sum of lost time (s) 18 Utilization 69.2% ICU Level of Service 18	Approach LOS		A	∢		ш		
10.7 HCM 2000 Level of Service 0.50 Sum of lost time (s)	slay 10.7 HCM 2000 Level of Service Capacity ratio 0.50 Sum of lost time (s) 18 h (s) 140.0 Sum of lost time (s) 18 Utilization 9.2% ICU Level of Service	ntersection Summary							
0.50 140.0 Sum of lost time (s)	Capacity ratio	HCM 2000 Control Delay			10.7	Ĭ	CM 2000	evel of Service	В
140.0 Sum of lost time (s)	h (s) 140.0 Sum of lost time (s) 18 Utilization 69.2% ICU Level of Service	HCM 2000 Volume to Capac	city ratio		0.50				
	Utilization 69.2% ICU Level of Service	Actuated Cycle Length (s)			140.0	જ	um of lost	time (s)	18.4
Utilization 69.2%		ntersection Capacity Utilizar	tion		69.2%	೨	U Level o	Service	υ
Analysis Period (min) 15		Applying Doring (min)							

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive

5 0 5 5 0 40 5 10 5 5 0 40 5 10 5 5 0 40 6 0 84 0.84 0.84 0.84 0.84 0.84 6 0 6 6 0 48 7.1 6.5 6.5 7.1 6.5 6.3 7.1 6.5 6.3 7.1 6.5 6.3 7.2 6.5 6.5 7.1 6.5 6.3 7.3 6.4 6.61 5.18 6 6 6 48 6 6 48 6 6 48 6 6 48 6 6 48 7 0.04 0.14 0.01 0.06 7 15.9 0.2 16 7 16.5 0.2 16 7 17 5 16.5 0.3 16 7 17 5 16.5 0.3 16 7 17 6 17 6 18 7 10 99 93 93 94 100 8 94 98 93 95 100 8 94 98 93 95 100 8 94 98 98 93 95 100 8 94 98 98 98 93 95 100 8 94 98 98 98 98 98 98 98 98 98 98 98 98 98	40 5	NBT	OBN	a	CBT	CBD
0 5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		g 4	NEX.	SBL	-g -g -g -g -g -g -g -g -g -g -g -g -g -	SBK
0.5 5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		545	2	40	330	5
0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0		545 Free	2	40	390 Free	2
0.84 0.84 0.84 0.84 0.84 1.8 3.8 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.6 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0		%0			%0	
15 6 6 0 0 36 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.	9.0	0.84	0.84	0.84	0.84	0.84
15 30 3.6 3.6 1.1 1 1 1 3 1.1 1 1.1 1	48 6	649	9	48	464	9
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1 3 3 6.5 0.91 0.91 1.275 482 1263 1275 482 1263 1275 4.0 3.6 5.5 7.1 6.5 4.0 100 99 97 100 216 563 202 216 6.5 6.5 17.1 6.5 4.0 100 99 97 100 216 563 202 216 6.5 6.1 518 6 6 6 8 48 6 6 6 8 6 6 8 6 6 8 6 6 6 6						
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0.91 0.85 0.91 0.91 1 1275 482 1263 1275 943 289 930 943 6.5 6.5 7.1 6.5 4.0 3.6 3.5 4.0 100 99 97 100 216 563 202 216 48 6 6 48 6 6 48 6 6 48 6 6 78 384 989 833 0.14 0.01 0.06 C A A 15.9 0.2 1.6 C A A 15.9 0.2 1.6 C C A A 15.9 0.2 1.6		None			None	
0.91 0.85 0.91 0.91 1275 482 1263 1275 1275 482 1263 1275 100 943 930 943 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 97 100 99 983 99 983 99 983 99 99 99 99 99 99 99 99 99 99 99 99 99						
943 299 930 943 (275 482 1263 1275 482 1263 1275 480 1276 1276 1276 1276 1276 1276 1276 1276		238			127	
1275 482 1263 1275 943 299 930 943 6.5 6.5 7.1 6.5 4.0 36 35 4.0 100 99 97 100 216 563 202 216 WB1 NB1 SB1 54 661 518 6 6 48 6 6 48 6 6 48 7 100 0.06 384 989 833 0.14 0.01 0.06 2 A A A 159 0.2 1.6 C A A 159 0.2 1.6				0.87		
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943 289 930 943 6.5 6.5 7.1 6.5 4.0 36 3.5 4.0 100 99 97 100 216 563 202 216 WB 1 NB 1 SB 1 54 661 518 6 6 48 6 6 48 6 6 6 384 989 833 0.14 0.01 0.06 3.7 0.1 14 15.9 0.2 1.6 C A A A						
943 229 930 943 945 945 945 945 945 945 945 945 945 945						
4.0 36 7.1 6.5 4.0 36 3.5 4.0 100 99 97 100 216 563 202 216 WB1 NB1 SB1 54 661 518 6 48 6 6 48 6 6 48 6 7.0 0.0 37 0.1 1.4 15.9 0.2 1.6 C A A A 15.9 0.2 1.6	303			268		
4.0 3.6 3.5 4.0 100 99 97 100 216 563 202 216 WB1 NB1 SB1 54 661 518 6 6 48 6 6 6 384 999 833 0.14 0.01 0.06 3.7 0.1 14 15.9 0.2 1.6 C A A A 15.9 0.2 1.6 C C A A				4.2		
40 36 35 40 100 99 97 100 99 97 100 216 563 202 216 48 6 6 48 6 6 48 6 6 834 989 833 0.14 0.01 0.06 2.7 0.1 14 15.9 0.2 1.6 C. A. A. A. 15.9 0.2 1.6 C. A. A. A. 15.9 0.2 1.6 C. A. A. A. 15.9 0.2 1.6 C. A. A. 15.9 0.2 1.6 C. A. A. 15.9 0.2 1.6 C. A.						
100 99 97 100 216 563 202 216 WB1 NB1 SB1 6 6 48 6 6 48 84 969 833 384 989 833 37 0.1 14 15.9 0.2 1.6 C A A A 15.9 0.2 1.6 C C 1.6				2.3		
216 563 202 216 WB1 NB1 SB1 54 661 518 6 6 48 6 6 48 6 6 48 784 989 833 7 0.1 1.4 15.9 0.2 1.6 C A A A 15.9 0.2 1.6 C A A 15.9 0.2 1.6	66 68			94		
WB1 NB1 S 54 661 6 6 48 6 6 48 6 0.14 0.01 0 3.7 0.1 15.9 0.2 C A 15.9				833		
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6 6 6 48 6 8384 989 8 0.14 0.01 0 0.2 0.2 C A 15.9 0.2 C						
48 6 384 989 6 0.14 0.01 0 1 15.9 0.2 C A 15.9 0.2 C A 15.9 0.2 C A 15.9 0.2 C C A 16.9 0.2 C C C A 16.9 0.2 C C C A 16.9 0.2 C C C C C C C C C C C C C C C C C C C						
384 989 8 0.14 0.01 0 3.7 0.1 15.9 0.2 C A 15.9 0.2 C 15.9 1.6						
0.14 0.01 0 3.7 0.1 15.9 0.2 C A 15.9 0.2 C						
3.7 0.1 15.9 0.2 C A 15.9 0.2 C						
15.9 0.2 C A 15.9 0.2 C						
C A 15.9 0.2 C						
C 0.2						
c.						
16						
2						
ntersection Capacity Utilization 57.6% ICU Level of Service	vice		ш			
15						

Synchro 11 Report Page 17 Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis 8: Kerr Street & Elmwood Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

35 30 360 360 360 0% 0.85 424 None 262 525 525 525 618 0.85 618 None 103 35 1700 0.27 0.00 0.0 2.2 99 1065 0.92 0.85 0.92 9 9 3.3 98 606 0.01 0.01 0.2 0.2 IB 1 624 36 24 12 353 0.10 0.10 C C C Stop 20 20 20 0.85 24 24 24 2.11 1.1 3.5 92 293 0.89 oSH Volume to Capacity Queue Length 95th (m) Control Delay (s) Lane LOS Lane Configurations Traffic Volume (veh/h) Future Volume (Veh/h) Median storage veh)
Upstream signal (m)
Dy, patoon unblocked
VC, conflicting volume
VCI, stage 1 conf vol
VCL, unblocked vol
CC, single (s)
EC, 2 stage (s)
EF (s) Grade Peak Hour Factor Hourly flow rate (vph) Lane Width (m)
Walking Speed (m/s)
Percent Blockage
Right turn flare (veh)
Median type p0 queue free % cM capacity (veh/h) Direction, Lane #
Volume Total
Volume Left
Volume Right Sign Control

Without Kerr St Improvements BA Group - EFS

ICU Level of Service

0.6 43.2% 15

Average Delay Intersection Capacity Utilization Analysis Period (min)

0.0

Approach Delay (s) Approach LOS

Future Total AM (Phase 2) Upper Kerr Village (8124-01) Timings 9: Kerr Street & Stewart Street

	SBT	(1	290	06	NA	9		9		0.1	0.5	0.0	%(9.6	3.3	1.1	0.0	5.4			4.0	3.0	0.0	0.0	<u>:</u>	10.0	0.4	35						
→	SBL SI		40 2		pm+pt l	-	9	Ψ.				10.0 45.0					_		Lead		3.0	3.0 3.0			None C-N	¥	1/							
←	NBT	4	420		¥	2		2									0.0				4.0							32				_		
•	NBL		5		Perm		2					35.0	-						Lag		4.0				_							t of Greer		
↓	. WBT		35		NA	ω		∞				30.0					0.0	5.4			0.4.0							20				BTL, Sta		
-	. WBL		20		, Perm		∞					30.0	-								4.0							70				L and 6:S		
†	EBT		25			4		4				30.0				2.1	0.0	5.4			4.0							20				e 2:NBT		
1	EBL		35	35	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20			2	ced to phas		oordinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control I ype: Actuated-Coordinated

Splits and Phases: 9: Kerr Street & Stewart Street

-₽ ₽ 30s -4 **★** Ø2 (R) ♦ Ø6 (R) 01

Synchro 11 Report Page 19 Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Upper Kerr Village (8124-01) Queues 9: Kerr Street & Stewart Street

Lane Group EBT WBT NBT SBT Lane Group Flow (vph) 79 152 542 440 W Ratio 0.28 0.40 0.47 0.43 Courtor Delay 23.8 14.2 9.6 9.2 Courto Delay 0.0 0.0 0.0 0.0 Total Delay 0.0 0.0 0.0 0.0 Total Delay 51.8 14.2 9.6 9.2 Courte Length 50th (m) 15.4 16.8 61.6 49.6 Internal Link Dist (m) 71.6 36.6 141.0 79.0 I'um Bay Length (m) 71.6 36.6 141.0 79.0 I'um Bay Length (m) 71.8 36.6 141.0 79.0 I'um Bay Length (m) 71.8 36.6 141.0 79.0 I'um Bay Length (m) 71.6 36.6 141.0 79.0 I'um Bay Length (m) 71.6 36.6 141.0 79.0 I'um Bay Length (m) 71.6 36.6 141.0 79.0 I'um Bay Capacity (vph) 71.0 0.0 0.0 Spillask Cap Reducth 0.0 0.0 0.0	
79 152 542 0.28 0.40 0.47 23.8 14.2 9.6 9.6 8.7 24.6 15.4 15.4 16.8 616 7 71.5 36.6 141.0 71.6 36.6 141.0 0 0 0	
0.28 0.40 0.47 1 2.38 14.2 96 0.0 0.0 0.0 0.0 23.8 14.2 96 9.6 9.6 9.7 24.6 15.4 16.8 61.6 47.0 71.6 36.6 141.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
23.8 14.2 9.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	
238 142 916 96 87 246 154 168 616 716 366 141.0 0 0 0	
23.8 14.2 9.6 9.6 8.7 24.6 15.4 16.8 61.6 71.6 36.6 141.0 1 459 559 1156 1 0 0 0	
9.6 8.7 24.6 15.4 16.8 61.6 71.6 36.6 141.0 459 559 1156 1 0 0 0 0 0 0	
71.6 36.6 141.0 71.6 36.6 141.0 459 559 1156 1 0 0 0	
71.6 36.6 141.0 79 459 559 1156 103 0 0 0 0 0 0	
459 559 1156 103 0 0 0 0 0 0	
459 559 1156 100 0 0 0 0 0 0 0 0 0	
0 0 0	
0 0 0	
0 0	
Reduced v/c Ratio 0.17 0.27 0.47 0.43	

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

AM (Phase 2)	err Village (8124-01)
ota	Upper Kerr
Future	

Part		4	†	<u> </u>	>	Ļ	4	•	←	•	۶	→	•
150 150		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
35 25 5 20 35 70 5 420 20 40 290 1900	s		4			4			4			4	
1900 1900	_	32	52	2	20	32	02	2	420	20	40	290	30
1900 1900		32	52	2	20	32	20	2	420	20	40	290	30
1,00		1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00			5.4			5.4			5.4			5.4	
1.00			1.00			1.00			1.00			1.00	
100 0.99 1.00 1			1.00			0.97			1.00			0.99	
100 0.99 0.92 0.99 0			0.39			1.00			1.00			1.00	
100 0.97 0.99 100 0.99 100 0.99 100			0.99			0.92			0.99			0.99	
1701 1612 1775 1727 1727 1727 1727 1727 1727 1727 1727 1727 1727 1728			0.97			0.99			1.00			66.0	
188			1701			1612			1775			1727	
1388 1532 1769 1575 1488 0.82 0.82 0.82 0.82 0.82 0.82 0.82 0.82 14			0.79			0.94			1.00			0.91	
F			1388			1532			1769			1575	
Mathematical Plant Mathema	4	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
hth) 0 5 0 68 0 0 1 0 0 34 20 20 20 20 30 36 35 22 20 20 20 30 30 36 22 7% 16% 0% 5% 4% 28% 6% 0% 2% 6% 1 0 2 0 0 2 0 0 0 0 0 47 1 0 2 0 0 2 0 0 0 0 0 0 0 0 0 0 0 2 1 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 4 152 152 200 000 5 1 152 200 000 5 2 1 100 100 100 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		43	9	9	24	43	88	9	512	24	49	354	37
bh 0 74 0 84 0 541 0 437 20 20 20 20 36 35 35 20 20 20 20 30 35 35 1 20 2 40 6% 6% 6% 6% 1 20 2 4 2 6% 6% 6% 6% 1 0 2 0 0 0 0 4 4 1 0 0 2 0 0 0 0 4 1 0 0 0 0 0 0 0 4 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0	(h	0	2	0	0	89	0	0	~	0	0	က	0
20 20 20 30 35 35 6% 2% 6% 6% 2% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6% 6%	h)	0	74	0	0	8	0	0	541	0	0	437	0
2% 7% 16% 0% 5% 4% 28% 6% 0% 2% 6% p 0 2 0 0 0 0 4 p 4 A Perm NA Perm NA pm+pt NA 4 4 B 2 0 0 0 4 152 152 49 0 49 49 49 49 152 152 49 0 65 65 49 49 49 49 49 49 65 49 65 49 65 49 65 49 65 65 49 65 49 65 65 49 65 49 65 65 65 49 65 65 65 65 65 65 65 65 65 65 65 65 65 65 65 65 65 65 65		20		50	50		20	8		35	32		30
Perm NA Perm NA Perm NA pm+pt		5%	%2	16%	%0	2%	4%	28%	%9	%0	2%	%9	%9
Perm NA Perm NA Pm+pt 4 4 8 2 1 4 4 8 2 1 152 152 49.0 6 6 152 152 49.0 6 6 54 5.4 5.4 5.4 6.5 5.4 4.0 4.0 6.65 0 5.4 4.0 4.0 4.0 6 5.4 5.4 5.4 5.4 5.4 5.0 5.4 5.4 5.4 5.4 6.5 5.4 5.4 5.4 5.4 6.5 6.5 6.5 6.5 6.5 6.0 6.2 6.2 6.5 6.5 6.5 6.0 6.2 6.5 7.9 7.9 7.9 7.0 7.0 7.0 7.9 7.9 7.9 8 7.9 7.9 7.9 7.9 7.9 <t< td=""><td></td><td>0</td><td>2</td><td>0</td><td>0</td><td>2</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>4</td><td>0</td></t<>		0	2	0	0	2	0	0	0	0	0	4	0
4 4 8 8 2 2 1 4 152 8 152 6 152 152 49.0 152 152 49.0 0.20 0.20 0.65 0.65 0.26 0.27 0.47 0.26 0.27 0.47 0.26 0.27 0.47 0.27 0.25 0.25 0.7 0.6 0.27 0.7 0.6 0.27 0.7 0.6 0.47 0.8 HCM 2000 Level of Service B 108 HCM 2000 Level of Service C C C C C C C C C C C C C C C C C C C		Perm	AN		Perm	NA		Perm	ΑN		pm+pt	¥	
152 152 29 6 152 152 490 6 152 152 490 6 152 152 490 6 152 152 490 6 154 54 54 54 4.0 4.0 1155 11 281 310 1155 11 0.05 0.07 0.047 0.07 0.06 0.27 0.047 0.07 0.07 0.06 0.47 0.07 0.08 0.07 0.04 0.07 0.06 0.09 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.07 0.06 1.4 0.08 0.07 0.06 1.4 0.09 0.07 0.06 1.4 0.09 0.09 0.09 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00			4			∞			2		_	9	
152 152 490 240		4			∞			2			9		
15.2 15.2 49.0 6.5 5.4 5.4 5.4 5.4 5.4 5.4 6.0 6.0 6.6 7.0 7.0 7.0 8 7.0 7.0 7.0 8 7.0 7.0 7.0 8 7.0 7.0 7.0 8 7.0 8 7.0 7.0 7.0 8 7.0 9	<u>(</u> 6		15.2			15.2			49.0			49.0	
0.20			15.2			15.2			49.0			49.0	
5.4 5.4 5.4 5.4 5.4 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4			0.20			0.20			0.65			0.65	
4.0 4.0 4.0 4.0 281 310 1155 1 0.05 0.05 0.031 0.47 0.26 0.27 0.47 0.47 25.2 25.2 25.2 6.5 1.00 1.00 1.00 1.00 0.7 0.6 1.4 1.4 25.9 25.9 7.9 0.7 0.6 1.4 0.8 HCM 2000 Level of Service B 0.8 10.8 HCM 2000 Level of Service C 0.44 10.8 HCM 2000 Level of Service C 0.45 10.8 HCM 2000 Level of Service C 0.46 1.3.8 1.3.8 0.47 1.0.8 1.3.8 0.48 1.3.8 1.3.8 0.49 1.3.8 1.3.8 0.40 1.3.8 0.40 1.3.8 0.4			5.4			5.4			5.4			5.4	
281 310 1155 11 0.05			4.0			4.0			4.0			4.0	
0.05			281			310			1155			1029	
0.05													
25.2 25.2 6.5 25.2 25.2 25.2 6.5 1.00 1.00 1.00 2.00 0.6 1.4 2.00 0.6 1.4 2.00 0.6 1.4 2.00 0.6 1.4 2.00 0.6 1.4 2.00 0.7 0.6 2.00 0.7 0.6 2.00 0.4 1.00 HCM 2000 Level of Service B Capacity ratio 0.44 1.3.8 1.01			0.02			c0.05			c0.31			0.28	
25.2 25.2 6.5 1.00 1.00 1.00 1.00 25.9 25.9 7.9 25.9 25.9 7.9 26.9 25.9 7.9 27.0 C C A 28.9 25.9 7.9 28.9 10.8 HCM 2000 Level of Service B Capacity ratio 0.44 CM 2000 Level of Service C C A 1.4 2.5.0 Sum of lost time (s) 13.8 15.1 CM Level of Service C C C C A 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			0.26			0.27			0.47			0.42	
2 0.7 0.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00			25.2			25.2			6.5			6.2	
25.9 25.9 7.9 25.9 25.9 7.9 25.9 25.9 7.9 25.9 25.9 7.9 25.9 25.9 7.9 25.9 25.9 7.9 25.9 25.9 7.9 25.9 25.9 7.9 25.9 7.9 25.9 25.9 7.9 25.9 13.8 25.0 Sum of lost time (s) 13.8 25.0 Sum o			1.00			1.00			1.00			1.00	
25.9 25.9 7.9 C C C A A 25.9 25.9 7.9 C C C A A C C C A A A A A A A A A A A A	2		0.7			9.0			4.			0.3	
C C C A 25.9 25.9 7.9 C C A A (A (A) (A) (A) (A) (A) (A)			25.9			25.9			7.9			6.5	
25.9 25.9 7.9 C C A A A A A A A A A A A A A A A A A A			O			O			⋖			⋖	
7 C C C A A C C C A A C C C A A C C C C			25.9			25.9			7.9			6.5	
10.8			O			O			⋖			∢	
slay 10.8 HCM 2000 Level of Service Capacity ratio 0.44 Sum of lost time (s) h (s) 75.0 Sum of lost time (s) Utilization 66.5% ICU Level of Service 15 15	>												
Capacity ratio 0.44 h (s) 75.0 Sum of lost time (s) Utilization 66.5% IOU Level of Service 15	Jelay			10.8	\(\)	3M 2000 I	Level of S	Service		В			
h (s) 75.0 Sum of lost time (s) Utilization 66.5% IOU Level of Service 15	o Capacity	/ ratio		0.44									
Utilization 66.5% 15	(s) th			75.0	S	ım of lost	time (s)			13.8			
Ω	y Utilizatio	L		%9.99	೦	U Level o	f Service			O			
	(c (c			ट्									

Without Kerr St Improvements BA Group - EFS

Timings 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

 	SBT	4413	1045	1045	₹	9		9		20.0	41.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0:0	C-Min	2.0	27.0	0									+ 04	S	80
۶	SBL	K.	150	150	Prot	~		~		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None											ŀ	Ċ	4	•
←	NBT	4413	1385	1385	¥	2		7		20.0	41.0	45.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	2.0	27.0	0											
•	NBL	K	110	110	pm+pt	2	2	2		7.0	12.0			12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0:0		None							Green					√ Ø3	21s	→ 07
Į.	WBT	₩	125	125	ΝΑ	œ		œ		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				T, Start of							
>	WBL	r	20	20	pm+pt	က	œ	က		7.0	12.0			16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SB			+ Posd	L NOAU			
1	EBT	₩	120	120	- Y	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				2:NBTL			Wyacrof	v vyed or			
1	EBL	*	215	215	Prot	7		7		7.0	12.0			16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							to phase		inated	10. Donyal Road & Wive groff Road	מ שטען פ	2		2
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Splite and Dhases: 10. Dony	\vdash	Ø1 • ¶ Ø2 (R)	17 s 42 s	1 05 + 06 (R)

Without Kerr St Improvements BA Group - EFS

> Synchro 11 Report Page 21

Future Total AM (Phase 2) Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

	4	†	-	↓	•	—	۶	→	
Lane Group	EBL	EBT	WBL	WBT	BE	NBT	SBL	SBT	
Lane Group Flow (vph)	234	239	22	391	120	1570	163	1614	
v/c Ratio	09:0	0.29	0.08	29.0	0.55	0.70	0.44	0.73	
Control Delay	9.99	21.4	28.3	25.2	27.5	17.3	53.6	28.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	9.99	21.4	28.3	25.2	27.5	17.3	53.6	28.7	
Queue Length 50th (m)	27.0	11.9	3.6	18.3	8.6	97.6	18.8	105.3	
Queue Length 95th (m)	40.0	24.5	9.0	32.5	m12.9	m142.9	28.7	146.5	
Internal Link Dist (m)		155.6		199.3		494.4		672.1	
Turn Bay Length (m)	115.0		145.0		65.0		125.0		
Base Capacity (vph)	416	934	361	1030	237	2258	382	2197	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.56	0.26	90:0	0.38	0.51	0.70	0.43	0.73	
Intersection Summary									

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total AM (Phase 2) Upper Kerr Village (8124-01)

	1	†	<i>></i>	>	Ļ	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	₹		r	₩.		۴	4413		F	441	
Traffic Volume (vph)	215	120	100	20	125	235	110	1385	09	150	1045	440
Future Volume (vph)	215	120	100	20	125	235	110	1385	09	150	1045	440
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
Lane Util. Factor	0.97	0.95		1.00	0.95		1.00	0.91		0.97	0.91	
Frpb, ped/bikes	0.0	0.99		1.00	0.99		1.00	1.00		1.00	0.1	
Hpb, ped/bikes Ert	9.0	0.93		1.00	0.00		1.00	0.00		1.00	9.0	
Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3127	3079		1637	3128		1641	5036		3433	4676	
Flt Permitted	0.95	1.00		09:0	1.00		80.0	1.00		0.95	1.00	
Satd. Flow (perm)	3127	3079		1039	3128		136	5036		3433	4676	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	234	130	109	22	136	255	120	1505	65	163	1136	478
RTOR Reduction (vph)	0	83	0	0	201	0	0	က	0	0	20	0
Lane Group Flow (vph)	234	156	0	22	190	0	120	1567	0	163	1564	0
Confl. Peds. (#/hr)	2		က	က		7	_					_
Heavy Vehides (%)	12%	%/	%6	10%	2%	2%	10%	2%	1%	2%	2%	4%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
Turn Type	Prot	Ϋ́		pm+pt	¥		pm+pt	¥		Prot	Ν	
Protected Phases	7	4		က	∞		2	2		-	9	
Permitted Phases				∞			2					
Actuated Green, G (s)	14.9	28.5		21.4	17.5		62.2	20.7		12.9	52.1	
Effective Green, g (s)	14.9	28.5		21.4	17.5		62.2	20.7		12.9	52.1	
Actuated g/C Ratio	0.12	0.24		0.18	0.15		0.52	0.42		0.11	0.43	
Clearance Time (s)	2.0	7.0		2.0	7.0		2.0	7.0		2.0	7.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	388	731		204	456		214	2127		369	2030	
v/s Ratio Prot	c0.07	0.05		0.00	00.00		c0.05	0.31		0.05	00.33	
v/s Ratio Perm				0.02			0.24					
v/c Ratio	09.0	0.21		0.11	0.42		0.56	0.74		0.44	0.77	
Uniform Delay, d1	49.8	36.7		41.1	46.6		19.7	29.1		50.2	28.9	
Progression Factor	1.00	1.00		1.00	1.00		1.24	0.59		1.00	1:00	
Incremental Delay, d2	3.9	0.3		0.5	<u>ر</u> دن		2.5	-		.	5.9	
Delay (s)	53.6	37.1		41.6	47.9		26.9	18.1		51.9	31.8	
Level of Service	□	Ω		Ω	□		O	ш			O	
Approach Delay (s)		45.2			47.6			18.7			33.6	
Approach LOS		۵			۵			ω			ပ	
Intersection Summary												
HCM 2000 Control Delay			30.4	Ĭ	HCM 2000 Level of Service	ovel of S	acivia		c			
HCM 2000 Volume to Capacity ratio	ty ratio		0.65									
Actuated Cycle Length (s)			120.0	Sn	Sum of lost time (s)	ime (s)			24.0			
Intersection Capacity Utilization	on		73.7%	೦	ICU Level of Service	Service						
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

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Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2) 11: Speers Road & Interim Connection Upper Kerr Village (8124-01)

																																								4	
																											SB 2	38	0	38	868	0.04	1.0	9.2	۷						
•	SBR	*	32	33			0.92	88									0.87	427			36	6.9		3.3	96	868	SB 1	0	0	0	1700	0.11	0.0	0.0	∢	9.2	∢			Service	
۶	SBL	r	0	0	Stop	%0	0.92	0									0.91	1368	838	230	808	8.9	2.8	3.5	100	453	WB2	307	0	83	1700	0.18	0.0	0.0						ICU Level of Service	
4	WBR		30	೫			0.92	33																			WB1	547	0	0	1700	0.32	0.0	0.0		0.0				⊇	
ļ	WBT	₩.	755	755	Free	%0	0.92	821						TWLTL	2	169											EB3	530	0	0	1700	0.31	0.0	0.0					0.2	31.8%	15
†	EBT	‡	975	975	Free	%0	0.92	1060						TWLTL TWLTL	2	99											EB2	530	0	0	1700	0.31	0.0	0.0							
4	EBL	<u>,-</u>	0	0			0.92	0									0.87	854			528	4.1		2.2	19	911	EB 1	0	0	0	1700	0.00	0.0	0.0		0.0				Ę	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Without Kerr St Improvements

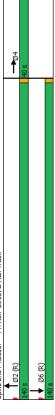
BA Group - EFS

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Timings
14: Kerr Street & Rail Track
Upper Kerr Village (8124-01)

Lane Group	NBT	Fac	8	
Lane Configurations		201	5	
Laire comigarations	*	+		
Traffic Volume (vph)	515	210		
Future Volume (vph)	515	210		
Turn Type	N A	Ϋ́		
Protected Phases	2	9	4	
Permitted Phases				
Detector Phase	2	9		
Switch Phase				
Minimum Initial (s)	2.0	2.0	2.0	
Minimum Split (s)	22.0	22.0	22.0	
Total Split (s)	140.0	140.0	40.0	
Total Split (%)	77.8%	77.8%	25%	
Maximum Green (s)	138.0	138.0	38.0	
Yellow Time (s)	2.0	2.0	2.0	
All-Red Time (s)	0.0	0.0	0.0	
Lost Time Adjust (s)	0:0	0.0		
Total Lost Time (s)	2.0	2.0		
Lead/Lag				
Lead-Lag Optimize?				
Vehide Extension (s)	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	
Recall Mode	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	
Intersection Summary				
Cycle Length: 180				
Actuated Cycle Length: 180				
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	phase 2:1	VBT and 6	SBT, St	tart of Green
Natural Cycle: 45				
Control Type: Pretimed				

Splits and Phases: 14: Kerr Street & Rail Track



Without Kerr St Improvements BA Group - EFS

Queues 14: Kerr Street & Rail Track	Track		Future Total AM (Phase 2) Upper Ker Village (8124-01)
	←	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	260	554	
v/c Ratio	0.39	0.39	
Control Delay	7.9	7.9	
Queue Delay	54.7	0.0	
Total Delay	62.6	7.9	
Queue Length 50th (m)	2.09	60.3	
Queue Length 95th (m)	77.5	77.1	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1414	
Starvation Cap Reductn	951	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.14	0.39	
Intersection Summary			

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HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total AM (Phase 2)
Upper Ken Village (8124-01)

	1	†	1	-	ļ	1	•	—	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		‡						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	515	0	0	510	0
Future Volume (vph)	0	0	0	0	0	0	0	515	0	0	510	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			2.0	
Lane Util. Factor								1.00			0.0	
F								1.00			1.00	
Flt Protected								1.00			1.00	
Satd. Flow (prot)								1881			1845	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	260	0	0	554	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	260	0	0	224	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	3%	%0
Turn Type								¥			AA	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1414	
v/s Ratio Prot								0.30			00.30	
v/s Ratio Perm												
v/c Ratio								0.39			0.39	
Uniform Delay, d1								7.0			7.0	
Progression Factor								1.00			1.00	
Incremental Delay, d2								0.8			0.8	
Delay (s)								7.8			7.8	
Level of Service								∢			∢	
Approach Delay (s)		0.0			0.0			7.8			7.8	
Approach LOS		∢			∢			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			7.8	H	3M 2000 I	HCM 2000 Level of Service	ervice		A			
HCM 2000 Volume to Capacity ratio	ty ratio		0.31									
Actuated Cycle Length (s)			180.0	S.	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	ou		30.4%	೦	ICU Level of Service	f Service			∢			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Upper Kerr Village (8124-01) HCM Unsignalized Intersection Capacity Analysis 1: Kerr Street & Wyecroft Road

Lange Configuration EB EBR NB NBT SBT SBR Lange Configuration (vehic) 25 140 125 615 520 110		4	>	•	←	→	*	
1	Movement	EBL	EBR	NBL	NBT	SBT	SBR	
1) 25 140 125 615 520 110 1) 25 140 125 615 520 110 10 083 0.83 0.83 0.83 0.83 0.83 1) 27 151 134 661 559 118 3.6 3.3 2.3 8.7 3.4 682 6.8 7.0 4.2 1.1 85 1.2 3.4 682 6.8 7.0 4.2 6.8 7.0 4.2 1.4 682 1.8 77 85 1.4 86 1.4 86 1.4 86 1.4 86 1.5 3.3 2.3 8.5 3.3 2.3 8.6 18 86 1.8 70 134 0 0 0 1.9 144 0 0 0 0 1.1 80 1.1 100 0.0 0.0 1.1 0.0 0.0 0.0 1.1 0.0 0.0 0.0 1.2 1 1.3 0.8 0.0 0.0 1.3 0.8 0.1 0.0 0.0 1.4 0 0.0 0.0 1.5 0.1 0.0 0.0 1.5 0.0 0.0 0.0 1.5 0.	ne Configurations	F	¥c.	r	*	₽ ‡		
Stop	Traffic Volume (veh/h)	22	140	125	615	520	110	
Stop	Future Volume (Veh/h)	52	140	125	615	520	110	
0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 % 0 %	Sign Control	Stop			Free	Free		
0.83	Grade	%0			%0	%0		
1.1	Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	
3.6 1.11 0 None None 1.222 3.44 682 6.8 7.0 4.2 6.8 7.0 4.2 8.2 77 85 1.48 644 876 1.81 134 330 330 373 304 2.7 151 134 330 330 373 304 2.7 151 134 330 330 373 304 2.7 151 134 0 0 0 0 0 0 0 0 0 151 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Hourly flow rate (vph)	27	151	<u>1</u> 3	661	529	118	
3.6 1.1 1.1 1.22 3.44 682 6.8 7.0 4.2 6.8 7.0 4.2 1.22 3.44 682 1.22 3.44 682 1.22 3.44 682 1.2 3.4 682 1.49 644 876 1.7 85 1.4 0 0 0 0 1.51 0 134 0 0 0 0 1.51 0 0 134 0 0 0 0 1.51 0 0 0 0 0 1.51 0 0 0 0 0 0 1.51 0 0 0 0 0 0 1.51 0 0 0 0 0 0 1.51 0 0 0 0 0 0 1.51 0 0 0 0 0 0 1.52 0 0 0 0 0 0 1.53 0 0 0 0 0 0 0 1.54 0 0 0 0 0 0 0 1.55 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 0 0 0 1.57 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Pedestrians	2						
1.1 None N	-ane Width (m)	3.6						
None	Iking Speed (m/s)	[-						
None None None 1222 344 662	Percent Blockage	0						
None	ht tum flare (veh)							
e 1222 344 682 6 8 7.0 4.2 6 8 7.0 4.2 6 8 7.0 4.2 8 6 7.0 4.2 8 7.1 85 8 7.1 134 380 380 373 304 7 151 134 30 0 0 0 151 0 0 151 0 0 0 0 118 148 644 876 1700 1700 1700 1700 0.18 0.23 0.15 0.19 0.20 0.18 0.18 0.23 0.15 0.19 0.20 0.0 0.18 0.23 0.15 0.19 0.0 0.0 0.0 0.18 0.23 0.17 0.10 0.0 0.0 0.0 0.18 0.23 0.17 0.17 0.0 0.0 0.0 0.25 0.18 0.20 0.17 0.20 0.0 0.25 0.25 0.25 0.25 0.25 0.25 0.25 0.25	dian type				None	None		
1222 344 682	dian storage veh)							
e 1222 344 682 6.8 7.0 4.2 3.5 3.3 2.3 82 77 85 148 644 876 EB 1 EB 2 NB1 NB2 NB3 SB1 SB2 27 0 134 0 0 0 0 118 0 151 0 0 0 0 0 118 m) 4.9 6.9 4.1 0.0 0.0 0.0 0.0 D B A 1 0.0 0.0 0.0 0.0 C C 255 1.7 0 0.0 0.0 0.0 1.8 0.23 0.15 0.19 0.19 0.22 0.18 A 15.7 1.7 0.0 0.0 0.0 0.0 D B A 1 0.0 0.0 0.0 0.0 C 2 25 0.18 0.23 0.18 0.20 0.18 A 25 0.0 0.0 0.0 0.0 0.0 C 2 25 0.18 0.23 0.18 0.19 0.20 0.18 C 2 25 0.18 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	stream signal (m)							
e 1222 344 682 122 344 682 6.8 7.0 4.2 3.5 3.3 2.3 82 77 85 148 644 876 1700 1700 1700 0.18 0.23 0.15 0.19 0.20 0.18 0.18 0.23 0.15 0.19 0.20 0.18 0.18 0.23 0.15 0.19 0.20 0.18 0.18 12.3 9.8 0.0 0.0 0.0 0.0 0.18 A A COULEVELOT Service	platoon unblocked							
1222 344 682 68 7.0 4.2 68 7.0 4.2 68 7.0 4.2 68 7.0 4.2 68 7.0 4.2 68 7.0 4.2 64 876 64 876 64 876 64 876 64 876 64 876 64 876 64 876 64 876 64 876 64 876 64 876 6700 1700 1700 1700 1700 1.8 6.4 876 1700 1700 1700 1.8 6.4 876 1700 1700 1.8 6.4 876 1700 1.8 6.4 876 1700 1700 1.8 6.4 876 1700 1.8 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8.2 8	conflicting volume	1222	344	682				
122 344 682 6.8 7.0 4.2 6.8 7.0 4.2 6.8 7.0 4.2 6.8 7.0 4.2 6.8 7.0 4.2 6.4 8/6 148 644 8/6 7.1 134 330 330 373 304 7.1 151 134 330 330 373 304 7.1 151 134 300 100 0.0 7.1 151 134 0.0 0.0 0.0 7.1 151 134 0.0 0.0 0.0 7.1 151 134 0.0 0.0 0.0 7.1 151 134 0.0 0.0 0.0 7.2 151 134 0.0 0.0 0.0 7.3 151 151 151 150 7.4 1 0.0 0.0 0.0 7.5 151 151 151 7.5 151 154 150 0.0 0.0 7.5 151 151 151 7.5 151 151 151 7.5 151 151 151 7.5 151 151 151 7.5 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151 151 7.5 151	, stage 1 conf vol							
1222 344 682 6.8 7.0 4.2 3.5 3.3 2.3 82 77 85 148 644 876 27 0 134 0 0 0 0 151 0 0 0 0 118 0 151 0 0 0 0 0 0 0 18 0.23 0.15 0.19 0.19 0.20 0.18 0 8 41 0.0 0.0 0.0 0.0 0 B A 10 0.0 0.0 0.0 0 B A 1 0.0 0.0 0.0 0.0 0 B A 1 0.0 0.0 0.0 0.0 0 B A 25 0.18 A 32 0.10 0.0 0.0 0 B A 32 0.10 0.0 0.0 0.0 0.0 0 B A 32 0.10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	, stage 2 conf vol							
8.5 3.3 2.3 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8	, unblocked vol	1222	344	682				
3.5 3.3 2.3 R2 77 85 148 644 876 27 151 134 330 330 373 304 27 151 134 330 330 373 304 27 151 134 30 0 0 0 0 0 18 644 876 1700 1700 1700 1700 0.18 0.23 0.15 0.19 0.19 0.22 0.18 M) 4.9 6.9 4.1 0.0 0.0 0.0 0.0 D B A 157 1.7 C 2 2.5 Utilization 38.2% ICU Level of Service	single (s)	6.8	7.0	4.2				
3.5 3.3 2.3 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6 8.6	2 stage (s)							
148 644 876 875	(s	3.5	3.3	2.3				
H48 644 876 EB1 EB2 NB1 NB2 NB3 SB1 SB2 27 151 134 330 330 373 304 27 0 134 0 0 0 0 118 148 644 876 1700 1700 1700 1700 0.18 0.23 0.15 0.19 0.19 0.22 0.18 M) 4.9 6.9 4.1 0.0 0.0 0.0 0.0 D B A A 15.7 1.7 0.0 0.0 0.0 C A 2.5 1.7 1.7 0.0 0.0 0.0 D B A A 1.7 0.0 0.0 0.0 C A 2.5 1.7 1.7 0.0 0.0 0.0 D B A A 1.7 1.7 0.0 0.0 0.0 D B A A 1.7 1.7 0.0 0.0 0.0 C A 2.5 1.7 1.7 0.0 0.0 0.0 C A 38.2% ICU Level of Service	nene tree %	82	11	82				
EB1 EB2 NB1 NB2 NB3 SB1 SB2	capacity (veh/h)	148	644	876				
27 151 134 330 330 373 304 27 0 134 0 0 0 0 0 115 0 0 0 118 148 644 876 1700 1700 1700 1700 0.18 0.23 0.15 0.19 0.19 0.22 0.18 2.18 123 9.8 0.0 0.0 0.0 0.0 D B A 157 1.7 C 2 2.5 Vullization 38.2% ICU Level of Service	ction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2
27 0 134 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0	ume Total	27	151	134	330	330	373	304
148 644 876 1700 1700 1700 1700 1700 1700 1700 17	ume Left	27	0	134	0	0	0	0
148 644 876 1700 1700 1700 1700 1700 1700 1700 17	ume Right	0	151	0	0	0	0	118
m) 6.18 0.23 0.15 0.19 0.19 0.22 0.18 3.41 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	_	148	644	876	1700	1700	1700	1700
m) 4.9 6.9 4.1 0.0 0.0 0.0 0.0 3.4.8 12.3 9.8 0.0 0.0 0.0 0.0 D B A 0.0 0.0 0.0 C C C C 2.5 **Thication 38.2%** ICU Level of Service 1.5 **Thication 38.2%**	ume to Capacity	0.18	0.23	0.15	0.19	0.19	0.22	0.18
34.8 12.3 9.8 0.0 0.0 0.0 0.0 D B A 0.0 0.0 0.0 15.7 1.7 0.0 C y 2.5 ICU Level of Service 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0	ene Length 95th (m)	4.9	6.9	4.1	0.0	0.0	0.0	0.0
15.7 1.7 0.0 C 1.7 0.0 y 2.5 ICU Level of Service 15.0	ntrol Delay (s)	34.8	12.3	8.6	0.0	0.0	0.0	0:0
15.7 1.7 0.0 C X 2.5 Literation 38.2% ICU Level of Service	e LOS	Ω	ω	∢				
y 2.5 CU Level of Service 15 15 15 15 15 15 15 15 15 15 15 15 15	proach Delay (s)	15.7		1.7			0.0	
2.5 38.2% ICU Level of Service 15	proach LOS	O						
2.5 38.2% ICU Level of Service 15	rsection Summary							
38.2% ICU Level of Service 15	rage Delay			2.5				
15	rsection Capacity Utilization	_		38.2%	2	J Level of	Service	⋖
	alysis Period (min)			15				

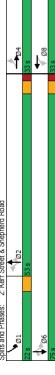
Synchro 11 Report Page 1 Without Kerr St Improvements BA Group - EFS

Timings 2: Kerr Street & Shepherd Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

	-	ļ	—	•	۶	→		
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	94	
Lane Configurations	*	2	ŧ	*	r	‡		
Traffic Volume (vph)	105	0	542	110	155	470		
Future Volume (vph)	105	0	542	110	155	470		
Turn Type	Perm	ΑN	Ν	Perm	pm+pt	₹		
Protected Phases		œ	2		~	9	4	
Permitted Phases	∞			2	9			
Detector Phase	∞	œ	2	2	~	9		
Switch Phase								
Minimum Initial (s)	2.0	2.0	18.0	18.0	7.0	18.0	2.0	
Minimum Split (s)	22.0	22.0	28.2	28.2	11.0	28.2	22.0	
Total Split (s)	33.0	33.0	53.0	53.0	22.0	75.0	33.0	
Total Split (%)	30.6%	30.6%	49.1%	49.1%	20.4%	69.4%	31%	
Maximum Green (s)	29.0	29.0	47.8	47.8	18.0	8.69	29.0	
Yellow Time (s)	3.0	3.0	3.3	3.3	4.0	3.3	3.0	
All-Red Time (s)	1.0	1.0	1.9	1.9	0.0	1.9	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	5.2	5.2	4.0	5.2		
Lead/Lag			Lag	Lag	Lead			
Lead-Lag Optimize?			Yes	Yes	Yes			
Vehide Extension (s)	3.0	3.0	3.5	3.5	2.5	3.5	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Recall Mode	None	None	Min	Min	None	Min	None	
Walk Time (s)	7.0	7.0	10.0	10.0		10.0	7.0	
Flash Dont Walk (s)	11.0	11.0	13.0	13.0		13.0	11.0	
Pedestrian Calls (#/hr)	0	0	2	2		വ	0	
Intersection Summary								
Cycle Length: 108								
Actuated Cycle Length: 49.4								
Natural Cycle: 65								
Control Type: Semi Act-Uncoord	oord							

Splits and Phases: 2: Kerr Street & Shepherd Road



Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Oueues

Queues 2: Kerr Street & Shepherd Road	pherd	Road					Future Total PM (Phase 2) Upper Kerr Village (8124-01)
	>	ļ.	-	•	٠	→	
Lane Group	WBL	WBT	NBT	NBR	SBL	SBT	
Lane Group Flow (vph)	108	149	562	113	160	485	
v/c Ratio	0.42	0.23	0.41	0.17	0.27	0.22	
Control Delay	23.5	8.0	12.8	3.7	5.1	4.7	
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.1	
Total Delay	23.5	8.0	12.8	3.7	5.4	4.8	
Queue Length 50th (m)	8.0	0.0	17.3	0.0	4.2	7.7	
Queue Length 95th (m)	21.6	0.0	33.5	9.7	11.5	16.1	
Internal Link Dist (m)		241.3	143.2			21.4	
Turn Bay Length (m)				20.0	20.0		
Base Capacity (vph)	230	1084	3374	1467	847	3574	
Starvation Cap Reductn	0	0	0	0	338	1608	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.14	0.17	0.08	0.31	0.25	
Intersection Summary							

Synchro 11 Report Page 3 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 2: Kerr Street & Shepherd Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Mathematic EB EB WB WB WB WB WB WB		1	†	>	>	ļ	4	•	←	•	۶	→	*
1	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ph) 0 0 0 105 0 145 0 545 110 155 470 ph) 0 0 0 0 105 0 140 190 1900 1900 1900 1900 1900 1900	Lane Configurations	F	£3		r	£3		F	*	R.	*	*	•
τρή) 0 0 105 0 145 0 545 110 155 470 1) 1900 <th< td=""><td>Traffic Volume (vph)</td><td>0</td><td>0</td><td>0</td><td>105</td><td>0</td><td>145</td><td>0</td><td>545</td><td>110</td><td>155</td><td>470</td><td>.0</td></th<>	Traffic Volume (vph)	0	0	0	105	0	145	0	545	110	155	470	.0
1900 1900 1900 1900 1900 1900 1900 190	Future Volume (vph)	0	0	0	105	0	145	0	545	110	155	470	0
1	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 037 100 035 100	Total Lost time (s)				4.0	4.0			5.2	5.2	4.0	5.2	
100 0.97 1.00 0.97 1.00 0.97 1.00 0.97 1.00 1.00 0.98 1.00 1.00 0.98 1.00 1	Lane Util. Factor				1.00	1.00			0.95	1.00	1.00	0.95	
100 100	Frpb, ped/bikes				1.00	0.97			1.00	0.97	1:00	9.5	
100 0.85 1.00 0.85 1	Flpb, ped/bikes				0.98	1.00			1.00	1.00	1.00		
17 17 17 17 17 17 17 17					1.00	0.85			00.1	0.85	0.1		
1716 1538 3539 1543 1804 3574 1716 1538 1539 1543 1804 3574 1716 1538 1539 1543 1804 3574 1716 1538 1539 1543 1804 3574 1716 1538 1539 1543 1804 3574 1716 1588 1538 1539 1543 1804 3574 1716 1588 1538 1539 1543 1804 3574 1716 1588 1539 1543 1804 3574 1716 1588 1539 1543 1804 3574 1716 1588 1539 1543 1804 3574 1716 1588 1539 1543 1804 3574 1716 1588 1589 1543 1804 3574 1716 1588 1589 1543 1804 3574 1716 1588 1589 1589 1589 1716 1588 1589 1716 1589 1589 1716 1589 1589 1716	Fit Protected				0.95	1.00			1.00	1.00	0.95	9.1	
m) 1388 1538 1539 1543 1655 1574 1670 1770 1788 1538 1538 1538 1538 1538 1538 1538 15	Satd. Flow (prot)				1716	1538			3539	1543	1804	3574	
nu (ph) 0 0 0 108 0 149 0 562 113 160 485 nu (ph) 0 0 0 0 108 29 0 562 44 160 485 nu (ph) 0 0 0 0 108 29 0 0 562 44 160 485 nu (ph) 0 0 0 0 108 29 0 0 562 44 160 485 nu (ph) 0 0 0 0 108 29 0 0 562 44 160 485 nu (ph) 0 0 0 0 108 29 0 0 562 44 160 485 nu (ph) 0 0 0 0 108 29 0 0 0 562 44 160 485 nu (ph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Satd Flow (nerm)				1368	1538			3539	1543	665	3574	
nn (yph) 0 0 0 108 0 149 0 562 113 160 485 nn (yph) 0 0 0 0 108 29 0 562 44 160 485 nn (yph) 0 0 0 0 108 29 0 562 44 160 485 nn (yph) 0 0 0 108 29 0 0 562 44 160 485 nn (yph) 0 0 0 108 29 0 0 562 44 160 485 nn (yph) 0 0 0 0 0 0 108 29 0 0 562 44 160 485 nn (yph) 0 0 0 0 0 0 0 3 0 0 0 5 5 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.97	0.97	26.0	0.97	0.97	26.0	26.0	0.97	0.97	0.97	0.97	0.97
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adj. Flow (vph)	0	0	0	108	0	149	0	295	113	160	485	0
0 0 0 108 29 0 0 562 44 160 485	RTOR Reduction (vph)	0	0	0	0	120	0	0	0	69	0	0	0
15 15 5 5 5	Lane Group Flow (vph)	0	0	0	108	59	0	0	562	44	160	485	0
6 0% 0% 3% 0% 1% 0% 1% 2% 0% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Confl. Peds. (#/hr)	2		15	15		2			2	5		
Name	Heavy Vehicles (%)	%	%	%0	3%	%	%	%0	%	5%	%0		%0
Perm NA Perm NA Perm NA Perm NA 8	Bus Blockages (#/hr)	0	0	0	0	က	0	0	2	0	0	0	
8 8 2 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Turn Type	Perm			Perm	≨		Perm	≨	Perm	pm+pt	Ϋ́	Perm
9.5 9.5 19.1 19.1 2 6 6 9.5 9.5 19.1 19.1 30.7 3 9.5 9.5 19.1 19.1 30.7 3 9.5 9.5 19.1 19.1 30.7 3 9.5 9.5 19.1 19.1 30.7 3 9.5 9.5 19.1 19.1 30.7 3 9.5 9.5 9.5 19.1 19.1 30.7 3 9.3 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6 9.6	Protected Phases		4			8			2		_	9	
9.5 9.5 19.1 19.1 30.7 3 0.19 0.19 0.39 0.39 0.39 0.52 0.19 0.19 0.39 0.39 0.50 0.19 0.19 0.39 0.39 0.50 0.20 0.02 0.016 0.04 0.04 0.10 0.10 0.10 0.10 0.10 0.10 0.1 0.1 0.1 0.2 0.1 0.2 1.0 0.1 0.1 0.1 0.2 0.1 0.2 1.0 0.1 0.1 0.2 0.1 0.2 1.0 0.1 0.1 0.1 0.2 1.0 0.1 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.2 1.0 0.1 0.2 1.0 0.1 0.2 1.0 0.1 0.2 1.0 0.1 0.2 1.0 0.1 0.2 1.0 0.1 0.2 1.0 0.3 0.3 1.0 0.4 0.3 0.3 1.0 0.4 0.3 0.3 1.0 0.3 0.3 0.3 0.3 0.3 0.3 1.0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0	Permitted Phases	4			∞			2		2	9		w
95 9.5 19.1 19.1 30.7 3 0.19 0.19 0.39 0.39 0.30 4.0 4.0 5.2 5.2 4.0 2.0 3.0 2.3 2.5 5.2 4.0 0.02 0.02 0.16 0.00 0.04 0.02 0.01 0.01 0.01 0.01 0.01 0.01 1.0 0.1 0.0 0.02 0.1 0.2 0.1 1.0 0.1 0.0 0.02 0.1 0.2 0.1 1.0 0.1 0.0 0.02 0.1 0.2 0.1 1.0 0.1 0.0 0.0 0.2 0.1 1.0 0.1 0.0 0.0 0.2 0.1 1.0 0.1 0.0 0.2 0.1 0.2 1.0 0.1 0.0 0.2 0.1 0.2 1.0 0.1 0.1 0.0 0.2 0.1 1.0 0.1 0.1 0.0 0.2 0.1 1.0 0.1 0.1 0.1 0.0 0.2 1.0 0.1 0.2 0.1 0.2 1.0 0.1 0.2 0.1 0.2 1.0 0.1 0.2 0.1 0.2 1.0 0.1 0.2 0.1 0.2 1.0 0.1 0.2 0.1 0.2 1.0 0.1 0.1 0.1 0.2 1.0 0.1 0.2 0.2 1.0 0.1 0.2 0.2 1.0 0.1 0.2 0.2 1.0 0.1 0.	Actuated Green, G (s)				9.5	9.5			19.1	19.1	30.7	30.7	
0.19 0.19 0.39 0.39 0.62 0.39 0.62 0.39 0.62 0.39 0.62 0.39 0.62 0.30 3.0 3.0 3.5 3.5 3.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	Effective Green, g (s)				9.5	9.2			19.1	19.1	30.7	30.7	
4.0	Actuated g/C Ratio				0.19	0.19			0.39	0.39	0.62	٥	
263 295 1368 596 588 2 260 002 0.01 0.02 0.01 0.00 0.00 0.00 260 08 0.02 0.01 0.03 0.13 261 0.02 0.04 0.00 0.01 0.02 0.13 262 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.0	Clearance Time (s)				4.0	4.0			5.2	5.2	4.0		
263 295 136 596 588 2 002 0.136 596 588 2 003 0.13 041 0.10 0.41 0.07 0.27 1 17.5 16.4 11.0 96 4.2 1.0 0.10 1.00 1.00 1.00 1.00 1.00 1.0 0.1 0.2 0.1 0.2 0.1 17.4 11.3 9.6 4.4 A B B B B A A A 0.0 17.4 11.0 0.2 0.39 HCM 2000 Level of Service A 0.39 HCM 2000 Level of Service A 15 10 Level of Service A 15 15 10 Level of Service A 16 17 18 18.2 18.2 18.2 18.2 18.2 18.2 18.2 1	Vehide Extension (s)				3.0	3.0			3.5	3.5	2.5	3.5	
0.02	Lane Grp Cap (vph)				263	292			1368	296	288	2221	
C008 0.03 0.13 0.14 17.5 16.4 11.0 9.6 4.2 1.00 1.00 1.00 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.2 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1 1.0 0.1 0.1	v/s Ratio Prot					0.02			00.16		60.04	0.14	
17.5 0.10 0.41 0.10 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.43 0.43 0.44 0.	v/s Ratio Perm				00.08	3			3	0.03	0.13	6	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Wc Ratto				17.5	16.10			14.0	0.0	12.0	0.22	
1.0 0.1 0.2 0.1 0.2 0.1 0.2 1.0 0.2 1.0 0.2 1.0 0.2 1.0 0.2 1.0 0.2 1.0 0.2 0.1 0.2 0.1 0.2 0.0 0.0 0.0 0.0 0.2 0.1 0.2 0.1 0.2 0.1 0.2 0.0 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3 0.3	Progression Factor				100	100			100	100	100	100	
18.5 16.6 11.3 9.6 4.4 B B B B A A A 11.0 A 17.4 11.0 A B B B B B B B B B B B B B B B B B B	Incremental Delay, d2				1.0	0.1			0.2	0.1	0.2	0.1	
9.3 HCM 2000 Level of Service A 0.39 Surm of lost time (s) 54.9% ICU Level of Service A 1.15	Delay (s)				18.5	16.6			11.3	9.6	4.4	4.2	
9.3 HCM 2000 Level of Service A 0.39 49.4 Sum of lost time (s) 13.2 54.9% ICU Level of Service A 15.2 15	Level of Service				ш	ш			ш	⋖	Α	⋖	
A B B B 9.3 HCM 2000 Level of Service A 0.39 A Sum of lost time (s) 13.2 54.9% ICU Level of Service A 15	Approach Delay (s)		0.0			17.4			11.0			4.2	
9.3 HCM 2000 Level of Service 0.39 49.4 Sum of lost time (s) 54.9% ICU Level of Service	Approach LOS		⋖			В			ш			¥	
9.3 HCM 2000 Level of Service 0.39 49.4 Sum of lost time (s) 54.9% ICU Level of Service	Intersection Summary												
0.39 49.4 Sum of lost time (s) 54.9% ICU Level of Service 15	HCM 2000 Control Delay			9.3	ĭ	3M 2000	Level of S	service		⋖			
49.4 Sum of lost time (s) 54.9% ICU Level of Service 15	HCM 2000 Volume to Capaci	ity ratio		0.39									
54.9% 15	Actuated Cycle Length (s)			49.4	ng i	m of lost	time (s)			13.2			
	Intersection Capacity Utilizati	ion		24.9%	⊡	U Level o	f Service			⋖			
c Critical Lane Group	Analysis Period (min)			15									
	c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	/	-	ţ	4	•	←	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
ane Configurations	<i>y-</i>	₩	¥C	je-	₩	*	<i>y</i> -	+	K.	F	+	*
raffic Volume (vph)	92	610	140	300	965	445	155	160	235	260	250	100
Future Volume (vph)	92	610	140	300	965	445	155	160	235	260	250	100
Turn Type	pm+pt	Ϋ́	Perm	pm+pt	ΑN	Perm	pm+pt	Ν	Perm	pm+pt	≨	Perm
Protected Phases	Ψ-	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4	∞		00
Detector Phase	τ-	9	9	2	2	2	7	4	4	က	∞	00
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Fotal Split (s)	12.0	54.0	54.0	12.0	54.0	54.0	16.0	38.0	38.0	16.0	38.0	38.0
Total Split (%)	10.0%	45.0%	45.0%	10.0%	45.0%	45.0%	13.3%	31.7%	31.7%	13.3%	31.7%	31.7%
Maximum Green (s)	9.0	48.1	48.1	9.0	48.1	48.1	13.0	31.7	31.7	13.0	31.7	31.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0:0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
.ead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
/ehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ime To Reduce (s)	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	15		12	15		35	32		32	35
ntersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

Splits and Phases: 3: Kerr Street & Speers Road



Synchro 11 Report Page 5 Without Kerr St Improvements BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

105 0.28 8.8 0.0 8.8 0.0 13.4 75.0 473 0 263 263 0.73 57.1 57.1 57.1 58.9 80.6 0.52 SBL 274 0.71 41.1 41.1 49.4 65.8 388 247 247 0.53 9.1 0.0 19.7 45.0 574 168 0.52 49.0 0.0 49.0 35.6 52.6 495 50.0 324 0 0 0 0 0 163 0.53 34.0 0.0 34.0 34.0 37.4 39.5 468 468 0.48 3.9 0.0 0.0 20.2 100.0 WBT 1016 0.58 25.0 0.0 25.0 87.8 128.5 474.4 1740 316 0.65 21.6 0.0 21.6 34.1 #68.0 75.0 147 147 0.19 9.7 9.7 8.8 8.8 75.0 642 642 0.41 23.6 23.6 53.1 94.4 138.4 105.0 323 1572 0 0 0 0 0 0 0 0 0 0 100 0.33 12.5 0.0 112.5 111.8 26.0 Total Delay

Queue Length 50th (m)

Queue Length 50th (m)

Queue Length 50th (m)

Lunal Link Dist (m)

Ium Bay Length (m)

Base Capacity (vph)

Sarvation Cap Reduch

Soriage Cap Reduch

Soriage Cap Reduch

Reduced v/c Ratio Lane Group Flow (vph) Control Delay Queue Delay

Without Kerr St Improvements BA Group - EFS

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

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Future Total PM (Phase 2)

HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road	Intersection Speers Road	ad ad	acity /	ınalysı	σ			Ī	iure L	l otal PM (Phase 2) Upper Kerr Village (8124-01)	Future Total PM (Phase 2) Upper Kerr Village (8124-01)	se 2) 24-01)
	1	†	*	•	ļ	4	•	←	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	‡	*	<u>, </u>	‡	*-	*	*	*	<u>, </u>	*	*
Traffic Volume (vph)	95	610	140	300	965	445	155	160	235	260	250	100
Future Volume (vph)	92	610	140	300	965	445	155	160	235	260	250	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lane Util. Factor	1:00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1:00	1.00	0.97	1.00	1.00	0.94	1.00	1.00	0.93	1.00	1.00	0.93
Flpb, ped/bikes	1:00	1.00	1.00	1.00	1.00	1.00	0.39	1.00	1.00	0.98	1.00	1.00
FT	1:00	1.00	0.85	1.00	1.00	0.85	1:00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1803	3511	1560	1750	3539	1485	1768	1877	1486	1754	1900	1501
Flt Permitted	0.21	1.00	1.00	0.32	1.00	1.00	0.36	1.00	1.00	0.49	1.00	1.00
Satd. Flow (perm)	389	3511	1560	288	3539	1485	663	1877	1486	968	1900	1501
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	100	642	147	316	1016	468	163	168	247	274	263	105
RTOR Reduction (vph)	0	0	8	0	0	238	0	0	204	0	0	82
Lane Group Flow (vph)	100	642	99	316	1016	230	163	168	43	274	263	20
Confl. Peds. (#/hr)	8		2	2		8	32		32	32		35
Heavy Vehicles (%)	%0	5%	%0	3%	2%	5%	%	%	%	%	%	%0
Bus Blockages (#/hr)	0	4	0	0	0	0	0	က	0	0	0	0
Turn Type	pm+pt	Ν	Perm	pm+pt	Ν	Perm	pm+pt	Ν	Perm	pm+pt	¥	Perm
Protected Phases	_	9		2	2		7	4		က	00	
Permitted Phases	9		9	2		2	4		4	∞		∞
Actuated Green, G (s)	62.0	53.8	53.8	70.2	29.0	29.0	32.7	20.9	20.9	36.5	22.8	22.8
Effective Green, g (s)	62.0	53.8	53.8	70.2	29.0	29.0	32.7	20.9	20.9	36.5	22.8	22.8
Actuated g/C Ratio	0.52	0.45	0.45	0.59	0.49	0.49	0.27	0.17	0.17	0.30	0.19	0.19
Clearance Time (s)	3.0	2.9	5.9	3.0	2.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Lane Grp Cap (vph)	297	1574	669	473	1740	730	289	326	258	370	361	285
v/s Ratio Prot	0.02	0.18		c0.07	0.29		90:0	0.09		c0.08	0.14	
v/s Ratio Perm	0.15		0.04	c0.32		0.15	0.10		0.03	c0.14		0.01
v/c Ratio	0.34	0.41	0.09	0.67	0.58	0.32	0.56	0.52	0.17	0.74	0.73	0.07
Uniform Delay, d1	15.9	22.3	19.1	13.7	21.7	18.3	35.3	45.0	42.1	35.3	45.7	39.9
Progression Factor	0.83	96.0	2.47	1.00	1.00	1:00	1:00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.8	0.3	3.2	4.1	-	2.0	. 8.	0.4	7.4	7.7	0.
Delay (s)	13.7	22.2	47.3	16.9	23.2	19.5	37.4	46.8	45.6	45.6	53.3	40.0
Level of Service	ω	O	۵	ш	ပ	ш	Ω	۵	۵	Ω	۵	
Approach Delay (s)		25.4			21.1			42.3			46.6	
Approach LOS		ပ			ပ			۵			O	

Without Kerr St Improvements BA Group - EFS

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18.2

29.4 0.72 120.0 83.4%

HCM 2000 Level of Service Sum of lost time (s) ICU Level of Service

Intersection Summary
HCM 2000 Control Delay
HCM 2000 Volume to Capacity ratio

Actuated Cyde Length (s)
Intersection Capacity Utilization
Analysis Period (min)
c Critical Lane Group

Timings 4: Dorval Road & Speers Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

	1	†	<u>/</u>	-	Ļ	1	•	←	۶	→	*	
Lane Group	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	K.	‡	*	*	‡	*	F	₩	×	‡	*-	
Traffic Volume (vph)	415	520	20	175	710	525	65	645	290	720	375	
Future Volume (vph)	415	520	20	175	710	525	65	645	290	720	375	
Turn Type	Prot	ΑN	Perm	pm+pt	¥	vo+mq	pm+pt	₹	pm+pt	ΑN	Perm	
Protected Phases	7	4		က	∞	-	2	2	~	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	~	2	2	-	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	19.0	4.0	44.0	17.0	45.0	19.0	11.0	40.0	19.0	48.0	48.0	
Total Split (%)	15.8%	36.7%	36.7%	14.2%	35.0%	15.8%	9.5%	33.3%	15.8%	40.0%	40.0%	
Maximum Green (s)	15.0	37.0	37.0	13.0	32.0	12.0	7.0	33.0	12.0	41.0	41.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1.0	1:0	3.0	1.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	O-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	2.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120	0											
Offset: 17 (14%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	ed to phase	2:NBTL	and 6:SB	TL, Start	of Green							
Natural Cycle: 115												
Control Type: Actuated-Coordinated	ordinated											
Splits and Phases: 4: Dor	4: Dorval Road & Speers Road	Speers	Soad									
100	Ø2 (R.)				•		100	24				
40 s					17 s		44 s					
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					1	7.0	₩"	₽.				
-					2		40	200				

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Future Total PM (Phase 2) Upper Kerr Village (8124-01) 813 0 0 0 0.50 408 2.5 0.0 2.5 4.6 4.1 783 0.59 16.1 0.0 16.1 62.5 31.2 0.59 315 0.95 74.7 0.0 74.7 ~47.1 330 0.95 788 0.83 49.5 0.0 49.5 90.1 113.5 621.6 0.81 0.26 21.3 0.0 21.3 9.2 17.7 0.26 70.0 9.77 0.77 31.1 0.0 31.1 52.8 115.0 55.0 WBT 772 0.79 63.4 0.0 63.4 89.1 120.2 472.1 WBL 190 0.49 38.5 38.5 38.5 33.9 63.0 0.48 399 0.00 0.3 0.0 0.0 0.0 60.0 583 0 0 0 0 0.09 565 0.52 36.2 0.0 36.2 57.5 74.6 412.3 1106 0.51 Queues 4: Dorval Road & Speers Road 451 451 0.99 92.1 0.0 92.1 ~59.7 60.0 456 0 0 0 0 0 Queue Delay

Queue Delay

Total Delay

Queue Length 50th (m)

Queue Length 95th (m)

Irun Bay Length (m)

Base Capacity (vph)

Stavation Cap Reducth

Spillack Cap Reducth

Spillack Cap Reducth

Reduced v/c Ratio Lane Group Flow (vph) v/c Ratio Control Delay

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Phase 2)

	4	†	1	-	↓	4	•	←	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ř.	‡	*-	*	ŧ	*	*	₩.		<u>, </u>	ŧ	*
Traffic Volume (vph)	415	520	20	175	710	525	65	645	80	290	720	375
Future Volume (vph)	415	220	20	175	710	525	65	645	80	230	720	375
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	9 5	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	00.0	1.00	1.00	1.00		1.00	9.6	1.00
	00.1	00.1	0.00	00.	0.0	0.00	00.	0.00		9.0	8. 5	0.00
Satd Flow (and)	2/33	3560	1556	1786	3546	1581	1805	3515		1787	3574	1500
Elt Permitted	0 95	100	100	0.37	100	5	034	100		0 13	100	100
Satd. Flow (perm)	3433	3560	1556	069	3546	1581	587	3515		235	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	451	265	24	190	772	571	71	701	87	315	783	408
RTOR Reduction (vph)	0	0	37	0	0	43	0	∞	0	0	0	225
Lane Group Flow (vph)	451	265	17	190	772	528	71	780	0	315	783	183
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehides (%)	2%	1%	2%	1%	1%	1%	%0	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	Ν	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	ΑN	Perm
Protected Phases	7	4		က	∞	-	2	2		-	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	15.9	36.9	36.9	44.8	32.9	20.0	37.7	32.1		53.2	43.6	43.6
Effective Green, g (s)	15.9	36.9	36.9	8.4	32.9	20.0	37.7	32.1		53.2	43.6	43.6
Actuated g/C Ratio	0.13	0.31	0.31	0.37	0.27	0.42	0.31	0.27		0.44	0.36	0.36
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	2.0
Lane Grp Cap (vph)	454	1094	478	366	972	658	241	340		325	1298	280
v/s Ratio Prot	c0.13	c0.16	3	0.05	0.22	c0.11	0.01	0.22		00.14	0.22	,
Ws Katlo Perm	000	0	0.0	0.14	040	0.22	0.08	000		60.29	09.0	0.0
Uniform Delay d1	52.0	34.2	29.7	26.5	40 4	30.7	29.5	414		32.8	31.1	27.5
Progression Factor	1.00	1.00	1.00	1.75	1.41	1.04	1.00	1.00		1.46	0.46	0.15
Incremental Delay, d2	40.3	8.0	0.1	1.2	2.0	8.9	0.7	8.4		35.8	1.6	1.
Delay (s)	92.3	35.0	29.1	47.5	62.1	38.6	30.1	49.8		83.8	15.9	5.3
Level of Service	ш	Ω	O	Ω	ш		O	Ω		ш	ш	A
Approach Delay (s)		58.9			51.6			48.2			27.2	
Approach LOS		ш			Ω			Ω			O	
Intersection Summary												
HCM 2000 Control Delay			45.2	Ĭ	SM 2000	HCM 2000 Level of Service	Service		۵			
HCM 2000 Volume to Capacity ratio	ity ratio		0.93									
Actuated Cycle Length (s)			120.0	ਲ !	sol jo mr	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	o		87.7%	೨	U Level	ICU Level of Service			ш			
Analysis Period (min)			12									
c Critical Lane Group												

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Without Kerr St Improvements BA Group - EFS

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Timings Future Total PM (Phase 2) 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

S. St. 7 (48) 45(11) 5 11.	5						
	^	†	ţ	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Configurations	<u>~</u>	4₽	4₽	¥C	<u>r</u>	ţ	
Traffic Volume (vph)	75	790	1145	22	20	0	
Future Volume (vph)	75	790	1145	22	20	0	
Turn Type	Perm	Α̈́	Ϋ́	Perm	Perm	NA	
Protected Phases		4	∞			9	
Permitted Phases	4			2	9		
Detector Phase	4	4	∞	2	9	9	
Switch Phase							
Minimum Initial (s)	2.0	2.0	2.0	2.0	2.0	5.0	
Minimum Split (s)	23.9	23.9	23.9	24.3	24.3	24.3	
Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0	
Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%	
Maximum Green (s)	87.1	87.1	87.1	20.7	20.7	20.7	
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	3.0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.9	5.9	5.9	6.3	6.3	6.3	
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	Q Min	O-Min	C-Min	None	None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0	0	
Intersection Summary							
Cycle Length: 120							
Actuated Cycle Length: 120							
Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	to phase	4:EBTL	and 8:WB	T, Start o	f Green		
Control Type: Actuated Coordinated	hated						
control type: Actuated cook	dilator						

Splits and Phases: 5: St. Augustine Drive & Speers Road



Without Kerr St Improvements

BA Group - EFS

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Queues 5: St. Augustine Drive & Speers Road

_	_
Future Total PM (Phase 2)	Upper Kerr Village (8124-01)

	1	†	Ļ	4	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Group Flow (vph)	78	849	1214	26	52	36	
v/c Ratio	0.22	0.28	0.40	0.07	0.39	0.16	
Control Delay	2.5	1.5	7.8	9.0	8.09	1.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0:0	
Total Delay	2.5	1.5	7.8	0.4	8.09	1.4	
Queue Length 50th (m)	2.2	12.8	101.3	0.0	11.9	0.0	
Queue Length 95th (m)	m3.2	m13.4	138.6	0.0	24.0	0.0	
Internal Link Dist (m)		472.1	49.4			93.6	
Turn Bay Length (m)	20.0						
Base Capacity (vph)	326	3032	3043	485	311	379	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	0.28	0.40	0.05	0.17	60.0	
Intersection Summary							
m Volume for 05th percentile guere is metered by unstream	i di la la dit	e motoro	hy ineta	an eign	_		
III VOIDILIE IOI SORI DEICEII	ווום לותמתם	מוופנסום	DY UDSE		-		

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis Future Total PM (Phase 2) 5: St. Augustine Drive & Speers Road Upper Kert Village (8124-01)

Movement EBI EBI EBI WBI WBI NBI NB	Movement												
No.		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
75 790 25 0 1145 20 0 25 50 0 1900	e Configurations	<i>y</i> -	₩			₹				¥	F	æ	
75 790 25 0 1445 20 0 0 25 50 0 1900 190	fic Volume (vph)	75	790	52	0	1145	20	0	0	25	20	0	35
1900 1900 1900 1900 1900 1900 1900 1900	rre Volume (vph)	75	790	22	0	1145	20	0	0	25	20	0	35
5.9 5.9 5.9 6.3 <td>Il Flow (vphpl)</td> <td>1900</td>	Il Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1,00 0.95 0.95 0.95 0.00 1,00 0.00 1	l Lost time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
1,00	e Util. Factor	1.00	0.95			0.95				1.00	1.00	1.00	
1,00	v, ped/bikes	1.00	1:00			1.00				1.00	1.00	1.00	
100	, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
100 0.95 1.00 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.02 1.00 0.95 1.00 0.02 1.00 0.95 1.00 0.02 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.96 0		1.00	1.00			1.00				98.0	1.00	0.85	
1800 3551 3563	rotected	0.95	1.00			1.00				1.00	0.95	1.00	
100 100	I. Flow (prot)	1800	3551			3563				1644	1805	1615	
Head 3561 3563 1644 1805 1615 1615 1616	ermitted	0.22	1.00			1.00				1.00	0.95	1.00	
F 0.96 0.9	I. Flow (perm)	416	3551			3563				1644	1805	1615	
78 823 26 0 193 21 0 26 52 0 34 34 34 34 34 34 34 10 76 848 0 1213 0 0 2 5 2 <td>k-hour factor, PHF</td> <td>96.0</td>	k-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0
hth) 0 1 1 0 0 1 1 0 0 0 24 0 34 ht) 5 5 5 5 5 5 2 2 ht) 5 6 6 5 5 5 6 5 2 2 ht) 6 1% 4% 0% 1% 0% 0% 0% 0% 0% 0% ht 4	Flow (vph)	28	823	56	0	1193	21	0	0	56	25	0	36
nh) 78 848 0 1213 0 0 2 52 2 0% 1% 4% 0% 1% 0% <td>R Reduction (vph)</td> <td>0</td> <td>-</td> <td>0</td> <td>0</td> <td>_</td> <td>0</td> <td>0</td> <td>0</td> <td>24</td> <td>0</td> <td>34</td> <td>0</td>	R Reduction (vph)	0	-	0	0	_	0	0	0	24	0	34	0
5 5 5 5 5 6 6 0%	e Group Flow (vph)	8/	848	0	0	1213	0	0	0	2	25	2	0
0% 1% 4% 0% 1% 0%<	Il. Peds. (#/hr)	2		2	2		2						
Perm NA NA Perm Perm Perm 4 4 8 2 6 5 100.1 100.1 100.1 7.7 7.7 1 100.1 100.1 100.1 7.7 7.7 2 8.3 0.83 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.06 0.00	vy Vehicles (%)	%0	1%	4%	%0	1%	%0	%0	%0	%0	%0	%0	%0
4	Type	Perm	AA			ΑN				Perm	Perm	₹	
s) 100.1 100.1 100.1 100.1 7.7 7.0 6.06 0	ected Phases		4			∞						9	
100.1 100.0 10.8	nitted Phases	4								7	9		
100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.1 100.2 10.8	ated Green, G (s)	100.1	100.1			100.1				7.7	7.7	7.7	
0.83 0.83 0.83 0.06 0.06 5.9 5.9 5.9 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 3.0<	ctive Green, g (s)	100.1	100.1			100.1				7.7	7.7	7.7	
59 59 59 63 73 63 73 73 73 74 74 74 74 73 73 72 74 73 74 73 74 74 74<	ated g/C Ratio	0.83	0.83			0.83				90.0	90.0	90.0	
30 30 30 30 30 30 30 30 30 30 30 30 30	rance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
347 2962 2972 105 115 0.24 0.034 0.00 0.00 0.00 0.22 0.29 0.41 0.02 0.45 2.0 2.2 2.5 5.5 5.6 54.1 2.0 2.2 2.77 1.00 1.00 2.2 1.4 7.3 52.7 5.9 5.4 A A A A A D E 9.4 D E Y A A A A A D E 9.4 D A	cle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
0.24 c0.34 0.00 c0.03 0.22 0.22 0.41 0.02 0.45 2.0 2.2 2.5 2.5 82.6 84.1 0.55 0.56 0.56 2.77 1.00 1.00 2 1.1 0.2 0.4 0.4 1.00 1.00 A A A A A A A A A A A A A A A A A A A	e Grp Cap (vph)	347	2962			2972				105	115	103	
0.19 0.19 0.20 0.29 0.29 0.29 0.25 0.29 0.41 0.05 0.55 0.56 0.57 0.10 0.10 0.41 0.20 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.4	Ratio Prot		0.24			c0.34						00.0	
0.22 0.29 0.41 0.02 0.45 2.0 2.2 2.5 2.5 2.7 0.02 0.45 2.0 1.1 0.2 0.7 1.00 1.00 2.2 1.4 7.3 5.7 56.9 A A A A A A A A A A A A A A A A A A A	Ratio Perm	0.19								0.00	c0.03		
2.0 2.2 2.5 5.5 5.4 5.4.1 2.0 2.2 2.5 5.5 5.6 5.4.1 2.1 1.4 7.3 5.7 7 1.00 1.00 1.00 2.2 1.4 7.3 52.7 5.7 5.9 5.9 4 A A A A A A A A A A A A A A A A A A	(atio	0.22	0.29			0.41				0.02	0.45	0.02	
2 1.1 0.2 0.4 0.4 0.100 2 1.1 0.2 0.4 0.100 2.2 1.4 7.3 0.1 0.1 0.1 0.1 A A A A A A B D y y y y y (s) 120,0 Sum of lost time (s) 1.2 8 0.1 (b) (s) 120,0 Sum of lost time (s) B 1.5 0.5 0.5 0.5 0.5 0.1 (b) (c) 120,0 Sum of lost time (s) B 1.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0.5 0	orm Delay, d1	2.0	2.2			2.5				52.6	4.7	52.6	
2 1.1 0.2 0.4 0.1 2.8 2.2 1.4 7.3 52.7 56.9 A A A A B B 1.5 7.3 52.7 A D E B y y y y (s) 1200 Sum of lost time (s) 12.2 B B 1.10 Sum of lost time (s) 12.2 B B	ression Factor	0.55	0.56			2.77				1.00	1.00	1.00	
2.2 1.4 7.3 52.7 56.9 A A A A A A B B B B B B B B B B B B B	emental Delay, d2	7:	0.2			0.4				0.1	2.8	0.1	
A A A A A D E E 1.5 7.3 52.7 A D E E 1.5 7.3 A D E E 1.5 A A D D E E 1.5 A A D D E E 1.5 A D D E I D D E I D D D D D D D D D D D D	ly (s)	2.2	1.4			7.3				52.7	56.9	52.7	
y A A D y A Capacity ratio A A n(s) 120.0 Sum of lost time (s) 12.2 Utilization 55.7% ICU Level of Service B	el of Service	⋖	<			⋖				۵	ш	۵	
y y A A A A D D Solution A A A A D D T 3 HCM 2000 Level of Service C capacity ratio 0.41 Sum of lost time (s) (b) 120, Sum of lost time (s) 55.7% CU Level of Service (b) 120, Sum of lost time (s) (c) 120, Sum of lost time (s)	roach Delay (s)		1.5			7.3			52.7			55.2	
y 7.3 HCM 2000 Level of Service of Capacity ratio 0.41 Sum of lost time (s) th (s) 55.7% ICU Level of Service of Utilization 55.7% ICU Level of Service of	roach LOS		∢			∢			۵			ш	
7.3 HCM 2000 Level of Service 0.41 120 Sum of lost time (s) 55.7% ICU Level of Service	section Summary												
0.41 120.0 Sum of lost time (s) 55.7% ICU Level of Service	A 2000 Control Delay			7.3	Ĕ	0000 M	Py Jo level	Pervice		⋖			
120.0 Sum of lost time (s) 55.7% ICU Level of Service	A 2000 Volume to Capaci	ty ratio		0.41									
zation 55.7% ICU Level of Service	lated Cycle Length (s)	,		120.0	Su	m of lost	time (s)			12.2			
4	section Capacity Utilization	5		55.7%	□	J Level o	Service			ш			
	lycic Doriod (min)			4	2					1			

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Timings 6: Speers Road/Cornwall Road & Cross Avenue

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

•	SBR	N. M.	420	420	Perm		4	4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0:0	0.0	None					
٠	SBL	r	10	10	Prot	4		4		10.0	15.8	38.0	27.1%	32.2	3.3	2.5	0.0	5.8			3.0	3.0	0.0	0.0	None					
ļ	WBT	₩	1325	1325	Ϋ́	9		9		38.0	47.6	85.0	%2.09	78.4	3.7	5.9	0.0	9.9	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2		
1	EBT	‡	745	745	Ν	2		2		38.0	47.6	102.0	72.9%	95.4	3.7	5.9	0.0	9.9			2.0	3.0	0.0	0.0	C-Min	10.0	31.0	2		
1	EBL	<i>y</i> -	265	265	pm+pt	2	2	2		0.9	12.0	17.0	12.1%	11.0	4.0	2.0	0.0	0.9	Lead	Yes	3.5	3.0	0.0	0.0	None					
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 140

Actuated Cycle Length: 140
Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue

102 s 102 s 102 s 103 s 104 s 105 s 10

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2)	Upper Kerr Village (8124-01)
Queues	6: Speers Road/Cornwall Road & Cross Avenue

6: Speers Road/Cornwall Road & Cross Avenue	rnwall F	Road &	Cross	Aven	e	Upper Kerr Village (8124-01)
	ŀ			ŀ		
	1	†	Ļ	٠	•	
Lane Group	EBL	BET	WBT	SBL	SBR	
Lane Group Flow (vph)	276	9//	1396	9	438	
v/c Ratio	0.64	0.27	29.0	0.05	0.80	
Control Delay	27.8	3.8	22.4	7.	31.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	27.8	3.8	22.4	77.	31.0	
Queue Length 50th (m)	33.4	21.8	128.8	5.6	21.9	
Queue Length 95th (m)	70.2	37.3	166.8	7.8	40.7	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	432	2920	2073	415	856	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.64	0.27	0.67	0.02	0.51	
VIETITIES CONTOURS						

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

																																							ပ		18.4	۵	
	SBR	K.	420	420	1900	5.8	0.88	1.00	1.00	0.85	1.00	2733	1.00	2/33	426	266	172		4%	Perm		4	14.4	14.4	0.10	3.0 3.0	281	-	90.00	0.61	60.1	1.00	3.9	64.1	ш				HCM 2000 Level of Service		time (s)	f Service	
	SBL	<u>r</u>			~	2.8	1.00	1:00	1.00	1.00	0.95	1805	0.95		0.30		ľ		%0	Prot	4		14.4	14.4	0.10	2.0 7.0	185	0.01		0.05	29.7	1:00	0.1	26.8 r	п с с	93.9	ш		HCM 2000 L		Sum of lost time (s)	ICU Level of Service	
	WBT WBR	₹ <u></u>			1900 1900	9.9	0.95	00.	1.00	00.	1.00	3567	1.00		1200 0.90		1396 0	5	1% 0%	NA	9		81.4	81.4	0.58	0.0	7.3	c0.39		0.67	20.2	1.00	∞. œ.	 0. 0	ء د	6.12	ပ		24.3	99.0	140.0	75.5%	
	EBT W	` ‡	•		1900 18				1.00		1.00	.,	ľ		0.90		776 1		%0	NA						0.0		0.21 c0					0.2				Ф		2	0	14	75.	
i	EBL	J	265	265	1900	0.9	1:00	1:00	1:00	1.00	0.95	1703	0.10	88	0.30	0/7	276	2	%9	pm+pt	2	2	113.2	113.2	0.81	9.5	431	c0.12	0.40	0.64	27.1	0.1	3.4	30.5	د					acity ratio		ation	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Ē	Fit Protected	Satd. Flow (prot)	Fit Permitted	Sard. Flow (perm)	Peak-flour lactor, PTP	RTOR Reduction (vph)	Lane Group Flow (vph)	Confl. Peds. (#/hr)	Heavy Vehicles (%)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Lane Gm Can (wh)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	V

Without Kerr St Improvements BA Group - EFS

ć HCM Unsign 7: Kerr Stree

HCM Unsignalized Intersection Capacity Analysis 7: Kerr Street & Prince Charles Drive	ersec S Cha	tion C	apacity rive	/ Analy	is Sis			Fut	Future Total PM (Phase 2) Upper Kerr Village (8124-01)	otal PN er Kerr V	Total PM (Phase 2) Upper Kerr Village (8124-01)	e 2) 24-01)
	4	†	<i>></i>	>	ļ	4	•	←	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			(4	
Traffic Volume (veh/h)	9	0	9	9	0	8	2	525	10	20	655	25
Future Volume (Veh/h)	9	0	9	9	0	ස	2	525	9	20	655	25
Sign Control		Stop			Stop			Free			Free	
		%0			%0			%0			%0	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	±	0	=	=	0	35	2	553	7	21	689	56
Pedestrians		20			8						2	
Lane Width (m)		3.6			3.6						3.6	
Walking Speed (m/s)		-			1.1						-	
Percent Blockage		2			က						0	
Right tum flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)								238			127	
20	0.79	0.79	92.0	0.79	0.79	0.93	97.0			0.93		
	1370	1368	722	1354	1376	594	735			594		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1146	1144	477	1126	1153	528	494			529		
tC, single (s)	7.1	7.0	6.2	7.1	6.5	6.2	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.5	3.3	3.5	4.0	3.3	2.4			2.2		
p0 queue free %	9	9	88	35	9	짱	66			86		
cM capacity (veh/h)	122	120	442	13	146	200	734			929		
Direction, Lane #	EB 1	WB1	NB 1	SB 1								
Volume Total	22	43	569	736								
Volume Left	=	=	2	71								
Volume Right	£	32	=	26								
	191	290	734	929								
	0.11	0.15	0.01	0.02								
ith (m)	5.9	3.9	0.2	0.5								
lay (s)	26.2	19.5	0.2	9.0								
	□	ပ	⋖	⋖								
(s) /	26.2	19.5	0.2	9.0								
Approach LOS		O										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			60.4%	ਹ	ICU Level of Service	Service			æ			
Analysis Period (min)			15									

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c, ij HCM Unsignalized Inter 8: Kerr Street & Elmwoo

Future Total PM (Phase 2)	Upper Kerr Village (8124-01)	
ed Intersection Capacity Analysis	Elmwood Road	

	`	/	_	-	•	,	
Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	>			4	2		
Traffic Volume (veh/h)	15	10	2	520	615	40	
Future Volume (Veh/h)	15	10	2	520	615	40	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	16	7	2	247	647	42	
Pedestrians	32						
Lane Width (m)	3.6						
Walking Speed (m/s)	7:						
Percent Blockage	က						
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	0.85	0.80	0.80				
vC, conflicting volume	1260	703	724				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	954	204	230				
tC, single (s)	6.4	6.3	4.3				
tC, 2 stage (s)							
F(s)	3.5	3.4	2.4				
p0 queue free %	83	97	66				
cM capacity (veh/h)	237	428	737				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	27	552	689				
Volume Left	16	2	0				
Volume Right	=	0	42				
SH	289	737	1700				
Volume to Capacity	0.09	0.01	0.41				
Queue Length 95th (m)	2.3	0.2	0.0				
Control Delay (s)	18.7	0.2	0.0				
Lane LOS	O	⋖					
Approach Delay (s)	18.7	0.2	0.0				
Approach LOS	O						
Intersection Summary							
Average Delay			0.5				
Intersection Capacity Utilization	tion		45.0%	೨	U Level o	ICU Level of Service	A

Without Kerr St Improvements BA Group - EFS

Timings
Future Total PM (Phase 2)
9: Kerr Street & Stewart Street
Upper Kerr Village (8124-01)

ane Group EBI EFT WBI NBI SBI SBI ane Configurations 40 1 40 55 505 ratio (vph) 50 10 10 15 10 400 55 505 cuture Volume (vph) 50 10 10 15 10 400 55 505 cuture Volume (vph) 50 10 10 15 10 400 55 505 cuture Volume (vph) 50 10 10 15 10 400 55 505 cuture Volume (vph) 50 10 10 15 10 400 505 505 505 chemited Phases 4 8 2 2 1 6 6 6 70										
44 40 55 400 55 400 55 70 400 55 70 70 70 70 70 70 70 70 70 70 70 70 70	sroup	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
400 55 400 55 NA PM+pt 2	onfigurations		4		4		4		4	
400 55 400 55 400 55 40 60 53 24.0 60 60 38.0 100 38.0 100 38.0 100 55.4 133% 60 29.6 7.0 5 21 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 35	Volume (vph)	20	9	10	15	9	400	22	202	
NA pm+pt 2 1 6 6 6 3 2 1 1 24.0 6.0 32.0 10.0 32.0 10.0 33.3 3.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Volume (vph)	20	9	9	15	10	400	22	202	
2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2 2 1 2	ype	Perm	ΑN	Perm	Ϋ́	Perm	Ϋ́	pm+pt	Ν A	
24.0 6.0 35.0 10.0 35.0 10.0 33.3 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0	ted Phases		4		∞		2	_	9	
24.0 6.0 32.0 10.0 35.0 10.0 35.0 10.0 35.0 10.0 35.0 10.0 35.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 1	ted Phases	4		∞		2		9		
24.0 6.0 32.0 10.0 46.7% 13.3% 60 23.0 7.0 3.3 3.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	or Phase	4	4	∞	∞	7	5	Ψ.	9	
24.0 6.0 35.0 100 35.0 100 29.6 7.0 21 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 35 35 4.0 30 30 30 30 30 30 30 30 30 30 30 30 30	ı Phase									
32.0 10.0 35.0 10.0 35.0 10.0 35.0 10.0 35.0 35.0 35.0 35.0 35.0 35.0 35.0 3	um Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
35.0 10.0 4.67% 13.3% 10.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	um Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
46.7% 13.3% 60 2.9.5 7.0 2.1 0.0 5.4 Lag Lead 4.0 3.0 10.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 3.3 3.3 3.0 3.0 3.0 14.0 3.0 14.0 3.0 14.0 3.0 14.0 3.0 14.0 3.0 14.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
29.6 7.0 2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Split (%)	40.0%	40.0%	40.0%	40.0%	46.7%	46.7%	13.3%	%0.09	
3.3 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Maximum Green (s)	24.6	24.6	24.6	24.6	29.6	29.6	7.0	39.6	
2.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	'ellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.3	
0.0 5.4 Lag Yes Yes 4.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 14.0 14.0	d Time (s)	2.1	2.1	5.1	2.1	2.1	2.1	0.0	2.1	
5.4 Lag Lead Yes Yes 4.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 11.0 14.0 35	ime Adjust (s)		0.0		0.0		0.0		0.0	
Lag Lead Yes Yes 4.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 11.0 14.0 3.5	Lost Time (s)		5.4		5.4		5.4		5.4	
Yes Yes Yes A0 30 30 30 00 00 00 00 00 00 00 00 00 00	Lag					Lag	Lag	Lead		
4.0 3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Lag Optimize?					Yes	Yes	Yes		
3.0 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	le Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
0.0 0.0 C-Min None C-C-Min None C-C-Min 35	a)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
C-Min None 10.0 14.0 35	To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
10.0 14.0 35	I Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
35	Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
35	-lash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
ntersection Summary 3/ce Length: 75 Substanted Cycle Length: 75 Historic Cycle 13 (17%), Referenced to phase 2.NBTL and 6:SBTL, Slart of Green Alatural Cycle: 75	Pedestrian Calls (#/hr)	20	20	20	20	32	32		35	
Length: 75 end Cycle Length: 75 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Slart of Green all Cycle: 76	ection Summary									
Actuated Cycle Length: 75 Offset 13 (17%), Referenced to phase 2:NBTL and 6:3BTL, Start of Green Natural Cycle: 75	Length: 75									
r. 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green al Cycle: 75	ted Cycle Length: 75									
al Cycle: 75	: 13 (17%), Reference	ed to phase	2:NBTL	and 6:SB1	L, Start o	of Green				
	al Cycle: 75									

Splits and Phases: 9: Kerr Street & Stewart Street

Without Kerr St Improvements

BA Group - EFS

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Queues
Queues
9: Kerr Street & Stewart Street

	†	Ļ	—		
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	84	109	462	663	
v/c Ratio	0.29	0.29	0.36	0.56	
Control Delay	21.6	10.0	8.0	11.0	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	8.0	11.0	
Queue Length 50th (m)	8.5	3.4	19.2	33.6	
Queue Length 95th (m)	16.5	13.0	56.9	102.4	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	44	225	1297	1192	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.36	0.56	
Intercontion Cummons					
Intersection Summary					

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

## PBL EBT EBR WBL 50 10 15 10 50 10 15 10 51 100 1900 1900 1900 52 0.92 0.92 0.92 54 11 16 11 0.77 1323 0.92 20% 0% 0% 0.92 0.92 0.92 20 132 0.03 13.2 13.2 0.18 5.4 4 13.2 2.8 5.4 4 13.2 0.18 5.4 4 0.29 0.20 0			L.	٠								٠	
\$\begin{array}{c c c c c c c c c c c c c c c c c c c	Novement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
50 10 15 10 16 75 10 4 50 10 15 10 16 75 10 4 100 1900 1900 1900 1900 1900 1900 0.99 1.00 0.99 1.00 0.97 0.99 0.92 0.92 0.92 0.92 0.92 0.97 0.77 0.99 1.00 0.80 0.90 0.90 0.90 0.97 0.77 0.99 1.00 0.90 0.90 0.90 0.90 0.97 0.97 0.99 1.00 0.90 0.90 0.90 0.91 0.97 0.90 0.90 0.90 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.93 0.94 0.96 0.0 0.0 0.94 0.96 0.0 0.0 0.0 0.97 0.98 0.99 0.92 0.92 0.92 0.98 0.99 0.90 0.90 0.99 0.90 0.90 0.90 0.90 0.90	ane Configurations		4			4			4			4	
1900 1900	raffic Volume (vph)	20	9	15	10	15	75	10	400	15	22	505	20
1900 1900	uture Volume (vph)	20	9	15	10	15	75	10	400	15	22	202	20
5.4 5.4 5.4 1.00 1.100 1	deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	otal Lost time (s)		5.4			5.4			5.4			5.4	
0.99 0.96 1.1 0.97 0.99 1.00 0.97 0.99 1.1 0.97 0.99 1.1 0.97 0.99 1.1 0.97 0.99 1.1 0.97 0.99 1.1 0.97 0.99 1.1 0.99 1.	ane Util. Factor		1.00			1.00			1.00			1.00	
0.98 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	rpb, ped/bikes		0.99			96:0			1.00			0.99	
0.97 0.99 1.1 1661 1562 18 0.07 0.99 0.99 1.1 1661 1562 18 0.07 0.92 0.92 0.92 0.92 0.92 0.9 54 11 16 11 16 82 11 4 0 68 0 0 0 4 0 0 68 0 0 0 4 0 0 68 0 0 0 0 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	-lpb, ped/bikes		0.98			1.00			1.00			1.00	
1661 1562 10 10 10 10 10 10 10 1	æ		0.97			0.30			1.00			0.99	
1661 1562 18 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	It Protected		0.97			0.99			1.00			1.00	
1323 1518 193 19	satd. Flow (prot)		1661			1562			1856			1802	
1323 15:18	It Permitted		0.77			0.97			0.98			0.93	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	atd. Flow (perm)		1323			1518			1830			1679	
20 13 0 0 68 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
0 13 0 0 68 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	.dj. Flow (vph)	72	=	16	=	16	82	=	435	16	09	549	54
2% 20% 0% 13% 2% 0% 0% 13% 2% 0% 0% 0% 0% 13% 2% 0% 0% 0% 13% 2% 0% 0% 0% 13% 2% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	(TOR Reduction (vph)	0	13	0	0	89	0	0	_	0	0	က	0
2% 20% 15 15 20 35 2% 20% 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ane Group Flow (vph)	0	89	0	0	4	0	0	461	0	0	099	0
2% 20% 0% 0% 13% 2% 0% 0% 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	confl. Peds. (#/hr)	8		15	15		8	32		22	22		35
Perm NA Perm NA Perm 1 4 8 8 2 13.2 13.2 13.2 5.4 0.18 0.18 0.18 5.4 4.0 4.0 0.18 5.0 5.4 4.0 0.03 0.29 0.16 0.0 0.29 0.16 0.0 1.0 0.10 0.14 2.78 2.65 0.6 C	leavy Vehicles (%)	2%	20%	%0	%0	13%	2%	%0	%	17%	1%	2%	%0
Perm NA Perm NA Perm II 4 13.2 8 2 5 7 13.2 5 5 7 13.2 5 7 13.2 5 7 13.2 5 7 12.2 5	us Blockages (#/hr)	0	2	0	0	2	0	0	0	0	0	က	0
4 8 8 2 13.2 13.2 55 13.2 13.2 55 13.2 13.2 55 13.2 13.2 55 13.2 13.2 55 13.2 13.2 55 13.2 0.18 0.0 14.0 4.0 4.0 6 12.2 26.8 2.67 12 1.0 0.29 0.16 0.0 1.0 0.4 0.0 27.8 28.5 6.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 28.5 6.5 6.5 27.8 28.5 6.5 28.5 6.5 6.5 27.8 28.5 6.5 28.5 6.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 27.8 28.5 6.5 28.5 6.5 29.5 6.5 6.5 20.5	urn Type	Perm	Ν		Perm	Ν		Perm	Ν		pm+pt	¥	
4 13.2 13.2 13.2 13.2 13.2 13.2 13.2 13.2	rotected Phases		4			∞			2		-	9	
13.2 13.2 13.2 13.2 13.2 13.2 13.2 13.2	ermitted Phases	4			œ			2			9		
13.2 13.2 13.2 13.2 13.2 13.2 13.2 13.2	ctuated Green, G (s)		13.2			13.2			21.0			21.0	
0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18	ffective Green, g (s)		13.2			13.2			21.0			21.0	
232 267 11 232 267 11 233 267 11 240 400 240 400 240 262 0.03 263 262 263 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265 278 265	ctuated g/C Ratio		0.18			0.18			0.68			0.68	
232 267 11 232 267 11 0.05 0.03 0 0 0.29 0.16 0 0 268 262 0 1.00 0.4 27.8 265 0 C	learance Time (s)		5.4			5.4			5.4			5.4	
232 267 11 0.05 0.03 0.03 0.29 0.16 26.8 26.2 1.00 1.00 1.0 0.4 27.8 26.5 C C C C Activatio 0.54 HCM 2000 Level of Service	ehicle Extension (s)		4.0			4.0			4.0			4.0	
c0.05 0.03 C C C C C C C C C C C C C C C C C C C	ane Grp Cap (vph)		232			267			1244			1141	
c0.05 0.03 C 0.29 0.16 C 26.8 26.5 C 1.00 0.4 1.00 1.00 1.00 1.00 C 27.8 26.5 C C C C C C C C C C C C C C C C C C C	/s Ratio Prot												
26.8 26.2 26.8 26.2 1.00 1.00 1.00 1.0 0.4 27.8 26.5 2 27.8 26.5 2 26.5	/s Ratio Perm		c0.05			0.03			0.25			c0.39	
26.8 26.2 1.00 1.00 1.00 1.00 1.00 0.4 27.8 26.5 C C C C C C C C C C C C C C C C C C C	/c Ratio		0.29			0.16			0.37			0.58	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 27.8 26.5 C C C C C C C C C C C C C C C C C C C	Jniform Delay, d1		26.8			26.2			5.1			6.3	
1.0 0.4 27.8 26.5 C	rogression Factor		1.00			1.00			1.00			1.00	
27.8 26.5 6 C C C C C C C Service HCM 2000 Level of Service leadity ratio 0.54 HCM 2000 Level of Service	ncremental Delay, d2		1.0			0.4			8.0			0.7	
C C C C C C C C C C C C C C C C C C C	lelay (s)		27.8			26.5			0.9			7.0	
27.8 26.5 C C 6 9.6 HCM 2000 Level of Service 10.54	evel of Service		O			O			A			⋖	
C C C 9.6 HCM 2000 Level of Service pacity ratio 0.54	pproach Delay (s)		27.8			26.5			0.9			7.0	
9.6 Pacity ratio 0.54	pproach LOS		O			O			⋖			⋖	
9.6 pacity ratio 0.54	ntersection Summary												
acity ratio 0.54	ICM 2000 Control Delay			9.6	Ĭ	CM 2000	Level of S	Service		⋖			
	ICM 2000 Volume to Capa	city ratio		0.54									
75.0	Actuated Cycle Length (s)			75.0	S	um of lost	time (s)			13.8			
ntersection Capacity Utilization 81.3% ICU Level of Service	ntersection Capacity Utiliza	tion		81.3%	೦	U Level o	of Service			□			
Analysis Period (min) 15	Analysis Period (min)			7									
				2									

Without Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 21

Timings 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Synchro 11 Report Page 22

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

	1	†	\	ţ	4	•	←	۶	→	
Lane Group	EBF	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	418	418	92	103	533	103	1505	141	1511	
v/c Ratio	0.98	0.56	0.22	0.48	0.88	0.43	0.89	0.19	29.0	
Control Delay	90.1	30.6	30.2	22.8	45.0	14.8	39.9	39.4	28.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	90.1	30.6	30.2	22.8	45.0	14.8	39.9	39.4	28.0	
Queue Length 50th (m)	51.2	30.0	10.9	23.0	91.0	7.9	136.7	13.8	96.5	
Queue Length 95th (m)	#82.7	45.1	19.8	38.3	129.7	m11.2 m#162.4	#162.4	23.2	132.7	
Internal Link Dist (m)		155.6		199.3			494.4		672.1	
Turn Bay Length (m)	115.0		145.0			65.0		125.0		
Base Capacity (vph)	428	1004	371	474	209	261	1690	730	2265	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reducth	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.98	0.42	0.18	0.22	0.88	0.39	0.89	0.19	29.0	
Company O moiston of all										

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

Movement EBI EBI EBI WBI ATH AT	Movement Lane Configurations Traffic Volume (vph) Future Volume (vph)	EBL	ŀ	EBR	IA/W				F				
1,	Lane Configurations Traffic Volume (vph) Future Volume (vph)		EBI		VOL	WBT	WBR	NBL	NBI	NBR	SBL	SBT	SB
386 2.20 165 60 95 490 95 1345 40 130 1180 386 2.20 165 60 95 490 95 1345 40 130 1180 1900 <td>Traffic Volume (vph) Future Volume (vph)</td> <td>K.</td> <td>₩</td> <td></td> <td>F</td> <td>*</td> <td>¥C.</td> <td>F</td> <td>4413</td> <td></td> <td>K</td> <td>4413</td> <td></td>	Traffic Volume (vph) Future Volume (vph)	K.	₩		F	*	¥C.	F	4413		K	4413	
385 220 165 60 95 490 95 145 400 1900	Future Volume (vph)	382	220	165	09	95	490	95	1345	40	130	1180	210
1900 1900	1.1 - 1.1 - 1.1 - 1.1 - 1.1 - 1.1 - 1.1 - 1.1	382	220	165	09	92	490	92	1345	40	130	1180	210
5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 5.0 7.0 1.00 1.00 1.00 1.00 1.00 1.00 1.0	ideal Flow (vpnpi)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
0.97 0.95 1.00 1.00 1.00 0.91 0.97 0.91 1.00 1.00 1.00 1.00 1.00 0.99 1.00 1.00	Total Lost time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
1,00	Lane Util. Factor	0.97	0.95		1.00	1.00	1.00	1.00	0.91		0.97	0.91	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.99	1.00	1.00		1.00	1.00	
100 0.94 1.00 1.00 0.88 1.00 0.98 1.00 0.99 0.92 0.92 0.92 0.92 0.92 0.92 0	Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1:00	
12.23 3.23.4 1783 170 0.95 100 0.95 1.00 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92		1.00	0.94		1.00	1.00	0.85	1.00	1.00		1:00	86.0	
3213 3234 1783 1727 1590 1715 5041 3502 4973 2019 0.05	Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (prot)	3213	3234		1783	1727	1590	1736	5041		3502	4973	
123 3234 353 1727 1390 229 5941 3502 4913 128 239 1792 639 039 039 039 039 039 128 209 209 209 209 209 209 039 039 128 109 65 103 533 103 1462 43 141 1283 128 290 65 103 479 103 1502 0 9 0 128 29 20 20 20 20 20 20 20	Fit Permitted	0.95	1.00		0.51	1.00	1.00	0.13	1.00		0.95	1.00	
160 22 8 4% 2% 1% 14 1283 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Satd. Flow (perm)	3213	3234		953	1727	1590	229	5041		3205	4973	
418 239 179 65 103 533 103 1462 43 141 1283 0 128 0 0 65 103 533 103 1462 43 141 1283 9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1/4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
10 128 0 0 6 1 17 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Adj. Flow (vph)	418	239	179	92	103	533	103	1462	43	141	1283	228
418 290 0 65 103 479 103 1502 0 141 1494 96 4% 2% 1% 10% 1% 4% 2% 0	RTOR Reduction (vph)	0	128	0	0	0	24	0	က	0	0	17	0
1 4 4 4 4 4 1	Lane Group Flow (vph)	418	290	0	65	103	479	103	1502	0	141	1494	0
9% 4% 2% 1% 10% 1% 4% 2% 2% 0% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%	Confl. Peds. (#/hr)	_		4	4		_	_		_	_		_
Prof. NA pm+Pt NA pm+Pt NA Prof. 7 4 3 8 1 5 2 2 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 16.0 22.8 24.8 15.8 40.8 50.1 39.2 20.1 0.13 0.14 0.21 0.13 0.34 0.42 0.33 20.1 0.13 0.19 0.21 0.13 0.34 0.42 0.33 20.1 0.13 0.14 0.21 0.14 0.14 20.1 0.10 0.02 0.06 0.01 0.04 0.03 20.1 0.03 0.02 0.06 0.01 0.04 20.1 0.03 0.04 0.03 0.04 20.1 0.04 0.05 0.05 0.04 0.01 20.1 0.05 0.05 0.05 0.04 0.01 20.2 0.05 0.05 0.04 0.01 20.3 0.04 0.05 0.05 0.04 20.3 0.04 0.05 0.05 0.04 20.3 0.04 0.05 0.05 0.05 20.4 0.05 0.05 0.05 0.04 20.5 0.04 0.07 0.01 0.19 20.6 0.04 0.07 0.01 0.19 20.1 0.05 0.05 0.05 0.05 20.1 0.05 0.05 0.05 0.05 20.2 0.05 0.05 0.05 0.05 20.3 0.05 0.05 0.05 0.05 20.4 0.05 0.05 0.05 0.05 20.5 0.05 0.05 0.05 0.05 20.6 0.05 0.05 0.05 0.05 20.8 0.05 0.05 0.05 0.05 20.8 0.05 0.05 0.05 0.05 20.8 0.05 0.05	Heavy Vehides (%)	%6	4%	5%	1%	10%	%	4%	5%	2%	%0	%	2%
Prof. NA pmr-pt NA pmr-ov pmr-tot NA pmr-tot NA pmr-tot NA pmr-tot NA prof.	Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 16.0 22.8 24.8 15.8 40.8 50.1 39.2 16.0 20.1 0.1 0.2 0.0 0.0 16.0 20.1 0.1 0.1 0.1 16.0 20.1 0.1 0.1 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 0.1 16.0 10.0 10.0 10.0 16.0 10.0 10.0 10.0 16.0 10.0 10.0 10.0 16.0 10.0 10.0 10.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 16.0 20.0 20.0 20.0 17.0 20.0 20.0 20.0 18.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0	Turn Type	Prot	A		pm+pt	¥	vo+mq	pm+pt	¥		Prot	Ν	
160 22.8 248 15.8 40.8 50.1 392 25.0 160 22.8 24.8 15.8 40.8 50.1 392 25.0 161 22.8 24.8 15.8 40.8 50.1 392 25.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 428 614 259 227 540 232 1646 729 5.0 7.0 5.0 5.0 5.0 5.0 603 0.47 0.25 0.27 540 232 1646 729 603 0.47 0.25 0.45 0.44 0.43 603 0.47 0.25 0.45 0.89 0.44 603 0.47 0.25 0.45 0.89 0.44 603 0.47 0.25 0.45 0.89 0.44 603 0.47 0.25 0.45 0.89 0.44 603 0.47 0.40 0.10 0.78 0.91 604 0.25 0.45 0.89 0.44 605 0.40 0.10 0.78 0.91 606 0.25 0.45 0.89 0.45 607 0.00 0.00 0.00 608 0.27 0.00 0.00 609 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 600 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00 0.00 700 0.00 0.00 0.00	Protected Phases	7	4		က	∞	_	2	2		_	9	
16.0 22.8 24.8 15.8 40.8 50.1 392 25.0 16.0 22.8 24.8 15.8 40.8 50.1 392 25.0 16.0 22.8 24.8 15.8 40.8 50.1 392 25.0 16.0 22.8 24.8 15.8 40.8 50.1 392 25.0 25.0 27.0 27.0 27.0 27.0 27.0 25.0 5.0 5.0 5.0 5.0 5.0 42.6 51.0 5.0 5.0 5.0 5.0 42.6 51.0 52.1 54.6 52.1 42.7 52.0 52.1 54.6 52.0 42.8 43.2 44.1 37.4 22.1 38.8 43.2 44.4 40.3 51.1 54.5 63.1 42.5 HCM 2000 Level of Service D 25.0 22.0 22.0 22.0 44.5 40.3 51.1 54.5 40.5 45.6 8.8 52.7 839.1 45.7 41.2 14.6 51.0 42.5 HCM 2000 Level of Service D 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52.0 52	Permitted Phases				∞		∞	2					
16.0 22.8 24.8 15.8 40.8 50.1 39.2 25.0 0.13 0.19 0.21 0.13 0.34 0.42 0.33 0.21 5.0 5.0 5.0 5.0 5.0 5.0 5.0 428 614 259 227 540 232 1646 729 5.0 428 614 259 227 540 232 1646 729 5.0 6.13 0.09 0.02 0.06 60.18 0.04 60.30 0.04 6.14 4.32 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 0.19 0.19 57.4 1.2 1.1 3.0 17.1 1.4 5.1 1.00 73.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 66.8 52.7 18.7 40.5 39.5 66.8 52.7 18.7 40.5 39.5 66.8 52.7 18.7 40.5 39.5 66.8 52.7 18.7 40.5 39.5 66.8 52.7 18.7 40.5 39.5 66.8 52.7 18.7 40.5 39.5 66.8 52.7 18.7 40.5 39.5 70.0 50.0 50.0 50.0 50.0 50.0 70.0 50.0 50.0 50.0 50.0 70.0 50.0 50.0 50.0 50.0 70.0 50.0 50.0 50.0 50.0 70.0 50.0 50.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 50.0 50.0 70.0 70.0 70.0 50.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70.0 70	Actuated Green, G (s)	16.0	22.8		24.8	15.8	40.8	20.1	39.5		25.0	53.3	
0.13 0.19 0.21 0.13 0.34 0.42 0.33 0.21 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 428 614 259 227 540 232 1646 729 7 6.0.13 0.09 0.02 0.06 6.0.18 0.04 6.030 0.04 0.08 0.47 0.02 0.06 0.018 0.04 6.030 0.04 1.00 1.00 1.00 1.00 0.78 0.91 0.19 37.4 4.2 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 0.78 0.91 1.00 37.4 4.4 40.3 5.1 54.5 18.7 40.5 39.5 F D D D D B B D D D C 6.8 52.7 52.7 39.1 42.5 HCM 2000 Level of Service D Dacity ratio 0.91 Sum of lost time (s) E	Effective Green, g (s)	16.0	22.8		24.8	15.8	40.8	50.1	39.5		25.0	53.3	
5.0 7.0 5.0 7.0 5.0 5.0 7.0 5.0 7.0 5.0 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Ratio	0.13	0.19		0.21	0.13	0.34	0.42	0.33		0.21	0.44	
5.0 5.0 <td>Clearance Time (s)</td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td>2.0</td> <td>2.0</td> <td>7.0</td> <td></td> <td>2.0</td> <td>7.0</td> <td></td>	Clearance Time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
428 614 259 227 540 232 1646 729 729 604 603 604 603 604 603 604 603 604 603 604 <td>Vehicle Extension (s)</td> <td>2.0</td> <td>2.0</td> <td></td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td>2.0</td> <td></td> <td>2.0</td> <td>2.0</td> <td></td>	Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
c0.13 0.09 0.02 0.06 c0.18 0.04 c0.30 0.04 0.98 0.47 0.025 0.45 0.89 0.44 0.91 51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 0.78 0.91 1.00 37.4 1.2 1.1 3.0 17.1 1.4 5.1 1.00 37.4 4.4 40.3 5.1 5.45 18.7 40.5 39.5 F D D D D B B D D D E 66.8 52.7 39.1 42.5 HCM 2000 Level of Service D Dacity ratio 0.91 Sum of lost time (s) E	Lane Grp Cap (vph)	428	614		259	227	240	232	1646		729	2208	
0.98 0.47 0.03 0.12 0.14 0.19 51.8 43.2 0.25 0.45 0.89 0.44 0.91 51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 1.00 1.00 1.00 1.00 0.78 0.91 1.00 37.4 1.2 1.1 3.0 1.7 1.4 5.1 0.3 89.2 44.4 0.3 51.1 54.5 18.7 4.0 D E 66.8 52.7 B E D D D D B D D Activatio 0.91 120.0 Sum of lost time (s) E Sation 150.0 Sum of lost time (s) E	v/s Ratio Prot	c0.13	0.09		0.02	90.0	c0.18	0.04	c0.30		0.04	0.30	
0.88 0.47 0.25 0.45 0.89 0.44 0.91 0.19 5.18 43.2 39.2 48.1 37.4 22.1 38.8 39.2 39.2 48.1 37.4 22.1 38.8 39.2 39.2 48.1 3.0 17.1 1.4 5.1 0.3 37.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 89.2 44.4 40.3 51.1 54.5 18.7 40.5 39.5 E D D D D D D B D D D D D D D D D D D D	v/s Ratio Perm				0.03		0.12	0.14					
51.8 43.2 39.2 48.1 37.4 22.1 38.8 39.2 17.0 17.0 17.0 17.0 17.0 17.0 17.0 17.0	v/c Ratio	0.98	0.47		0.25	0.45	0.89	0.44	0.91		0.19	0.68	
1.00 1.00 1.00 1.00 1.00 0.78 0.91 1.00 0.78 0.91 1.00 0.3 0.74 1.2 1.1 3.0 1.7.1 1.4 5.1 0.3 0.3 0.9.2 4.4 4.0.3 5.1.1 5.4.5 18.7 4.0.5 0.9.5 E D D D D B D D D D D D D D D D D D D D	Uniform Delay, d1	21.8	43.2		39.2	48.1	37.4	22.1	38.8		39.2	26.5	
37.4 1.2 1.1 3.0 17.1 1.4 5.1 0.3 89.2 44.4 40.3 51.1 54.5 18.7 40.5 39.5 P 66.8 D D D D D D E D 52.7 D D D D 52.7 D D D A2.5 HCM 2000 Level of Service D active 0.91 Sum of lost time (s) 24.0 zation 15 ICU Level of Service E	Progression Factor	1.00	1.00		1.00	1.00	1.00	0.78	0.91		1.00	1:00	
89.2 44.4 40.3 51.1 54.5 18.7 40.5 39.5 F D D D D B D D D D D D D D D D D D D D	Incremental Delay, d2	37.4	1.2		- -	3.0	17.1	1.4	5.1		0.3	1.7	
F D D D B D D D D B D D D D D D D D D D	Delay (s)	89.2	47.4		40.3	51.1	54.5	18.7	40.5		39.5	28.2	
66.8 52.7 39.1 E D D 42.5 HCM 2000 Level of Service D acity ratio 0.91 Sum of lost time (s) 24.0 zation 83.9% ICU Level of Service E 15.0 Sum of lost time (s) E 15.1 Service E	Level of Service	ш	□		□	□	□	മ	□		□	ပ	
A2.5 HCM 2000 Level of Service D 24.5 HCM 2000 Level of Service D 24.5 ACM 2000 Level of Service D 24.0 Sum of lost time (s) 24.0 24.0 Table of Service E 15	Approach Delay (s)		8.99			52.7			39.1			29.5	
42.5 HCM 2000 Level of Service 0.91 0.91 120.0 Sum of lost time (s) 2ation 83.9% ICU Level of Service 15	Approach LOS		ш						۵			O	
42.5 HCM 2000 Level of Service 0.91 0.91 0.00 1.20.0 Sum of lost time (s) zation 83.9% ICU Level of Service 15	Intersection Summary												
oscity ratio 0.91 120.0 Sum of lost time (s) zation 83.9% 15 ICU Level of Service 15 15	HCM 2000 Control Delay			42.5	 	3M 2000	Level of	Service		۵			
120.0 Sum of lost time (s) zation 83.9% ICU Level of Service 15	HCM 2000 Volume to Capacity	y ratio		0.91									
Utilization 83.9% ICU Level of Service 15	Actuated Cycle Length (s)			120.0	Su	m of los	t time (s)			24.0			
	Intersection Capacity Utilization	E		83.9%	ō	U Level	of Service	a)		ш			
	Analysis Period (min)			15									

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HCM Unsignalized Intersection Capacity Analysis 11: Speers Road & Interim Connection

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

	4	†	Į.	4	٠	*		
Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations	K	*	* ‡		K	æ		
Traffic Volume (veh/h)	0	865	1135	8	0	8		
Future Volume (Veh/h)	0	865	1135	8	0	8		
Sign Control		Free	Free		Stop			
Grade		%0	%0		%0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	940	1234	87	0	83		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right tum flare (veh)								
Median type	F	TWLTL 1	TWLTL					
Median storage veh)		2	2					
Upstream signal (m)		73	162					
pX, platoon unblocked	0.79				0.82	0.79		
vC, conflicting volume	1321				1748	099		
vC1, stage 1 conf vol					1278			
vC2, stage 2 conf vol					470			
vCu, unblocked vol	880				1191	46		
tC, single (s)	4.1				8.9	6.9		
tC, 2 stage (s)					2.8			
tF (s)	2.2				3.5	3.3		
p0 queue free %	100				100	96		
cM capacity (veh/h)	615				292	808		
Direction, Lane #	EB 1	EB2	EB3	WB1	WB2	SB 1	SB 2	
Volume Total	0	470	470	823	498	0	33	
Volume Left	0	0	0	0	0	0	0	
Volume Right	0	0	0	0	87	0	33	
cSH	1700	1700	1700	1700	1700	1700	808	
Volume to Capacity	0.00	0.28	0.28	0.48	0.29	0.11	0.04	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.0	1.0	
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	9.6	
Lane LOS						∢	A	
Approach Delay (s)	0.0			0.0		9.6		
Approach LOS						∢		
Intersection Summany								
mersecutin cultillary								
Average Delay			0.1					
Intersection Capacity Utilization			43.9%	<u>ರ</u>	ICU Level of Service	Service	A	
Analysis Period (min)			15					

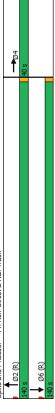
Without Kerr St Improvements

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Timings
Timings
14: Kerr Street & Rail Track
Upper Kerr Village (8124-01)

Splits and Phases: 14: Kerr Street & Rail Track



Without Kern St Improvements BA Group - EFS

Queues			Future Total PM (Phase 2)
14: Kerr Street & Rail Track	ail Trac	*	Upper Kerr Village (8124-01)
	←	→	
Lane Group	NBT	SBT	
Lane Group Flow (vph)	719	651	
v/c Ratio	0.50	0.45	
Control Delay	9.3	8.7	
Queue Delay	52.8	0:0	
Total Delay	62.1	8.7	
Queue Length 50th (m)	88.4	75.8	
Queue Length 95th (m)	111.6	95.9	
Internal Link Dist (m)	21.4	418.6	
Turn Bay Length (m)			
Base Capacity (vph)	1442	1442	
Starvation Cap Reductn	828	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	1.17	0.45	
Intersection Summary			

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total PM (Phase 2) Upper Kerr Village (8124-01)

	1	†	~	>	Į.	4	•	←	•	۶	→	*
Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	069	0	0	625	0
Future Volume (vph)	0	0	0	0	0	0	0	069	0	0	625	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)								2.0			2.0	
Lane Util. Factor								1.00			1.00	
끂								1.00			1:00	
Fit Protected								1.00			1.00	
Satd. Flow (prot)								1881			1881	
Flt Permitted								1.00			1.00	
Satd. Flow (perm)								1881			1881	
Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96:0	96:0	0.96
Adj. Flow (vph)	0	0	0	0	0	0	0	719	0	0	651	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	719	0	0	651	0
Heavy Vehides (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	1%	%0
Turn Type								¥			Ν	
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)								138.0			138.0	
Effective Green, g (s)								138.0			138.0	
Actuated g/C Ratio								0.77			0.77	
Clearance Time (s)								2.0			2.0	
Lane Grp Cap (vph)								1442			1442	
v/s Ratio Prot								00.38			0.35	
v/s Ratio Perm												
v/c Ratio								0.50			0.45	
Uniform Delay, d1								7.9			7.5	
Progression Factor								1.00			9.	
Incremental Delay, d2								1.2			1.0	
Delay (s)								9.5			8.5	
Level of Service								∢			∢	
Approach Delay (s)		0.0			0.0			9.5			8.5	
Approach LOS		∢			∢			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			8.9	¥	3M 2000	HCM 2000 Level of Service	Service		⋖			
HCM 2000 Volume to Capacity ratio	city ratio		0.39									
Actuated Cycle Length (s)			180.0	Su	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	tion		39.6%	೦	ICU Level of Service	f Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure 1: Kerr Street & Wyecroft Road

	4	~	•	←	→	*		
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	-	¥L.	je-	##	₩			
Traffic Volume (veh/h)	2	0	0	0	0	125		
Future Volume (Veh/h)		0	0	- Fr	- Fr	125		
Grade	%0			%	%			
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Hourly flow rate (vph)	2	0	0	0	0	133		
Pedestrians								
Lane Width (m)								
Walking Speed (m/s)								
Percent Blockage								
Right tum flare (veh)								
Median type				None	None			
Median storage veh)								
Upstream signal (m)								
pX, platoon unblocked								
vC, conflicting volume	99	99	133					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	99	99	133					
tC, single (s)	6.8	7.0	4.1					
tC, 2 stage (s)								
tF (s)	3.5	3.3	2.2					
p0 queue free %	8	100	100					
cM capacity (veh/h)	937	980	1449					
Direction, Lane #	EB 1	EB2	NB 1	NB 2	NB3	SB 1	SB 2	
Volume Total	2	0	0	0	0	0	133	
Volume Left	2	0	0	0	0	0	0	
Volume Right	0	0	0	0	0	0	133	
cSH	937	1700	1700	1700	1700	1700	1700	
Volume to Capacity	0.01	0.14	0.00	0.10	0.10	0.20	0.08	
Queue Length 95th (m)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
Control Delay (s)	8.9	0.0	0.0	0.0	0.0	0.0	0.0	
Lane LOS	⋖	⋖						
Approach Delay (s)	8.9		0.0			0.0		
Approach LOS	⋖							
Intersection Summary								
Average Delay			0.3					
Intersection Capacity Utilization	_		14.1%	ರ	ICU Level of Service	Service	¥	
Analysis Period (min)			15					

Without Kerr St Improvements

Synchro 11 Report

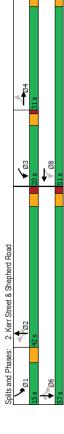
BA Group - EFS

Page 1

Timings 2: Kerr Street & Shepherd Road

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

Lane Group WBI NBR Ø1 Ø4 Ø6 Ø8 Lane Conjuguations NB NB MB MB MB MB MB MB		•	L					
120 70 120 70 120 70 120 70 120 70 18.7 3 2 18.7 38.9 140, 220, 28.2 200 42.0 150, 31.0 57.0 18.5 38.9 140, 229, 53% 160 36.8 140, 229, 53% 160 36.8 140, 229, 53% 160 0.0 0.0 10 1.9 0.0 0.0 0.0 10 1.9 0.0 0.0 0.0 0.0 0.0 0.0 13.0 3.5 3.6 3.5 3.6 3.0 3.5 3.6 3.6 3.0 3.0 3.0 3.0 3.0 10 0.0 0.0 0.0 0.0 0.0 13.0 0.0 0.0 0.0 0.0 0.0 13.0 11.0 13.0 13.0 11.0 13.0 13.0 11.0 13.0 13.0 12.0 13.0 13.0 13.0 13.0 13.0 13.0 14.0 14.0 15.0 13.0 15.0 14.0 14.0 15.0 13.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15	Lane Group	WBL	NBR	Ø1	04	9Ø	8Ø	
120 70 120 70 120 70 120 70 120 70 120 70 180 2 1 4 6 18 2 2 1 6 180 7.0 5.0 18.0 200 42.0 13.0 27.0 57.0 18.5% 38.9% 14% 29% 53% 14% 14% 29% 53% 140 77.0 51.8 1.0 38.8 11.0 27.0 51.8 3.0 3.3 4.0 3.0 3.3 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lane Configurations	*	¥L.					
120 70 mm+pt Perm 1 4 6 8 2 1 4 6 8 2 2 1 6 8 2 2 1 6 8 2 1.0 20.0 28.2 20, 42,0 15,0 31,0 57,0 51,0 18,0 18,5% 38,9% 11,0 27,0 51,8 16,0 36,8 11,0 27,0 51,8 16,0 36,8 11,0 27,0 51,8 10,0 1,9 0,0 1,0 1,9 10,0 0,0 0,0 0,0 0,0 None Min None None Min None None Min None Min None Min None None None None None None None Non	Traffic Volume (vph)	120	02					
9 1 4 6 8 8 2 8 2 8 8 2 8 8 8 9 8 9 9 9 9 9 9 9	Future Volume (vph)	120	70					
3 1 4 6 6 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	Turn Type	pm+pt	Perm					
8 2 3 2 50 18.0 7.0 5.0 18.0 90 28.2 11.0 22.0 28.2 20.0 42.0 15.0 37.0 57.0 18.5% 38.9% 11.0 27.0 57.8 16.0 36.8 11.0 27.0 57.8 30 33 4.0 30 33 1.0 1.9 0.0 1.0 1.9 1.9 0.0 0.0 0.0 0.0 None Min None None Min None None Min None Min None None Min None None None None None None None Non	Protected Phases	က		_	4	9	∞	
3 2 50 180 70 50 180 90 282 11.0 22.0 282 200 42.0 150 31.0 57.0 185% 38.9% 14% 29% 53% 160 36.8 11.0 27.0 518 30 3.3 4.0 3.0 3.3 1.0 1.9 0.0 1.0 1.9 0.0 0.0 1.0 1.9 0.0 1.0 1.9 4.0 5.2 1.0 1.9 0.0 1.0 1.9 5.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Permitted Phases	∞	2					
5.0 18.0 7.0 5.0 18.0 9.0 28.2 11.0 22.0 28.2 20.0 42.0 15.0 31.0 57.0 18.5%, 88.9%, 14%, 29%, 55%, 16.0 36.8 11.0 27.0 51.8 3.0 33.8 11.0 27.0 51.8 3.0 0.0 0.0 1.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Detector Phase	က	2					
50 180 7.0 5.0 180 90 28.2 11.0 22.0 28.2 20.0 42.0 11.0 31.0 57.0 18.5% 38.9% 14% 29% 53% 16.0 36.8 11.0 27.0 51.8 30 3.3 4.0 3.0 3.3 10 1.9 0.0 1.0 1.9 40 5.2 Lead Lag Lead Lag Yes	Switch Phase							
200 28.2 11.0 22.0 28.2 20.0 28.2 20.0 42.0 15.0 15.0 15.0 15.0 15.0 15.0 15.0 15	Minimum Initial (s)	2.0	18.0	7.0	2.0	18.0	2.0	
18.5% 8.9% 14% 29% 53% 16.0 36.9 31.0 57.0 18.5% 8.9% 14% 29% 53% 10.0 1.0 1.9 0.0 1.0 1.9 0.0 1.0 1.9 0.0 0.0 0.0 0.0 0.0 1.0 1.9 0.0 1.0 1.9 0.0 1.0 1.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Minimum Split (s)	0.6	28.2	11.0	22.0	28.2	22.0	
18.5% 38.9% 14% 29% 53% 16.0 3.8 4.0 3.0 3.3 1.0 1.9 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Total Split (s)	20:0	45.0		31.0	92.0	51.0	
160 368 110 270 518 30 3.3 40 30 33 10 10 19 00 1.0 1.9 00 0.0 00 0.0 19 15 2.5 3.0 3.5 30 3.5 2.5 3.0 3.5 30 3.0 3.0 0.0 0.0 00 0.0 0.0 0.0 0.0 00 0.0 0.0	Total Split (%)	18.5%	38.9%		78%	23%	41%	
3.0 3.3 4.0 3.0 3.3 1.0 1.0 1.0 1.0 0.0 0.0 0.0 0.0 1.0 1.0	Maximum Green (s)	16.0	36.8		27.0	51.8	47.0	
1.0 1.9 0.0 1.0 1.9 0.0 0.0 4.0 5.2 Lead Lag Lead Lag Yes Yes Yes Yes 3.0 3.5 2.5 3.0 3.5 3.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.0	3.3		3.0	3.3	3.0	
900 0.0 40 5.2 Lead Lag Lead Lag Yes Yes Yes Yes 30 3.5 2.5 3.0 3.5 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 None Min None Min 110 130 5 5 0 5 1-Unccord	All-Red Time (s)	1.0	1.9		1.0	1.9	1.0	
140 5.2 Lead Lag Lead Lag Yes Yes Yes Yes 30 3.5 2.5 3.0 3.5 30 3.0 0.0 0.0 0.0 0 0.0 0.0 0.0 0.0 0 0.0 0.	Lost Time Adjust (s)	0:0	0.0					
Lead Lead Lead Lag Yes Y	Total Lost Time (s)	4.0	5.2					
Yes Yes Yes Yes Yes 3.3 3.0 3.5 2.5 3.0 3.5 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Lead/Lag	Lead	Lag	_	Lag			
30 35 25 30 35 35 30 35 30 35 30 35 30 30 30 30 30 30 30 30 30 30 30 30 30	Lead-Lag Optimize?	Yes	Yes		Yes			
s) 30 30 30 30 30 00 00 00 00 00 00 00 00 00 00 None Min None None Min 100 70 100 130 110 130 5 0 5 1-Uncoord	Vehide Extension (s)	3.0	3.5		3.0	3.5	3.0	
s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Gap (s)	3.0	3.0		3.0	3.0	3.0	
None Min None Min None Min None 100 100 100 100 130 11.0 13.0 11.0 13.0 13	Time Before Reduce (s)	0.0	0.0		0.0	0:0	0.0	
None Min None None Min 10.0 7.0 10.0 13.0 13.0 14.0 13.0 5 0 5 5 0 5 5 1.3.7.8	Time To Reduce (s)	0.0	0.0		0.0	0.0	0.0	
10.0 7.0 10.0 13.0 11.0 13.0 5 0 5 1.37.8	Recall Mode	None	E M	None	None	Mi	None	
13.0 11.0 13.0 5 5 0 5 5 10 5 5 10 5 10 10 10 10 10 10 10 10 10 10 10 10 10	Walk Time (s)		10.0		7.0	10.0	7.0	
5 0 1.37.8 1.0000rd	Flash Dont Walk (s)		13.0		11.0	13.0	11.0	
Intersection Summary Cycle Length: 108 Aduated Cycle Length: 37.8 Natural Cycle: 78 Control Type: Semi Ad-Unccord	Pedestrian Calls (#/hr)		2		0	2	0	
Cycle Length: 108 Adutated Cycle Length: 37.8 Natural Cycle: 7.8 Control Type: Semi Ad-Unccord	Intersection Summary							
Aduated Cycle Length: 37.8 Natural Cycle: 75 Control Type: Semi Art-Uncoord	Cycle Length: 108							
Natural Cycle: 75 Control Type: Semi Ard-Uncoord	Actuated Cycle Length: 37.8							
Control Type: Semi Act-Uncoord	Natural Cycle: 75							
	Control Type: Semi Act-Unc	oord						



Without Kerr St Improvements BA Group - EFS

Queues 2: Kerr Street & Shepherd Road	pherd F		Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)
	>	*	
Lane Group	WBL	NBR	
Lane Group Flow (vph)	132	77	
v/c Ratio	0.38	90.0	
Control Delay	16.0	0.1	
Queue Delay	0.0	0.0	
Total Delay	16.0	0.1	
Queue Length 50th (m)	6.4	0.0	
Queue Length 95th (m)	18.2	0.0	
Internal Link Dist (m)			
Turn Bay Length (m)		50.0	
Base Capacity (vph)	200	1473	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.19	0.05	
Intersection Summary			

Synchro 11 Report Page 3 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure 2: Kerr Street & Shepherd Road

Controlled Con								-					
Ighracions Ighraci	Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBI
wine (aph) 0 0 120 0 0 70 0 wine (aph) 0 0 120 0 0 70 0 0 (inplics) 1900<	Lane Configurations	je.	£		r	2		r	*	¥C.	r	*	ľ
Unne (vph) 0	Traffic Volume (vph)	0	0	0	120	0	0	0	0	20	0	0	
time (s) 1900	Future Volume (vph)	0	0	0	120	0	0	0	0	70	0	0	0
Factor 1,00	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
100 100	Total Lost time (s)				4.0					5.2			
bikes 100 098 100 099	Lane Util. Factor				1.00					1.00			
1,00 1,00	Frpb, ped/bikes				1.00					0.98			
ed (100 0.85) ed (101 0.91 0.91 0.91 0.91 0.91 0.91 0.91 0	Flpb, ped/bikes				1.00					1.00			
led (100) led (1671) l	Fr				1:00					0.85			
rector, PHF 0.91 0.91 0.91 0.91 0.91 1501 ed (1671) ed (Fit Protected				0.95					1.00			
Control Delay	Satd. Flow (prot)				16/1					1501			
Phases P	Satd Flow (norm)				1671					1501			
(vpl) 0 <td>Deak-hour factor DHE</td> <td>0.01</td> <td>0.01</td> <td>0.01</td> <td>100</td> <td>0.01</td> <td>0.01</td> <td>0.01</td> <td>0 01</td> <td>001</td> <td>0 04</td> <td>0 04</td> <td>Ò</td>	Deak-hour factor DHE	0.01	0.01	0.01	100	0.01	0.01	0.01	0 01	001	0 04	0 04	Ò
decidon (u/ph) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Adi Flow (vnh)	5	5	5	132	5	5	5	5	77	5	5	5
tb. (kfl/kfl) 0 0 45 0 0 sis (ffl/kfl) 5 6 0 </td <td>RTOR Reduction (vph)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>32</td> <td>0</td> <td>0</td> <td>0</td>	RTOR Reduction (vph)	0	0	0	0	0	0	0	0	32	0	0	0
Isi (#Inf) 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 7 3%	Lane Group Flow (vph)	0	0	0	132	0	0	0	0	45	0	0	ľ
hides (%) 0% 0% 0% 0% 2% 5% 1% 3% agges (#Hr)1 Perm pm+pt Perm	Confl. Peds. (#/hr)	2		2	2		2			2	2		
ages (#Int) 0 <tr< td=""><td>Heavy Vehicles (%)</td><td>%0</td><td>%0</td><td>%0</td><td>%8</td><td>%0</td><td>%0</td><td>%0</td><td>2%</td><td>2%</td><td>1%</td><td>3%</td><td>ô</td></tr<>	Heavy Vehicles (%)	%0	%0	%0	%8	%0	%0	%0	2%	2%	1%	3%	ô
Perm pm+pt Perm Perm pm+pt Perm pm+pt pm+pt pm+pt pm-pt pm-	Bus Blockages (#/hr)	0	0	0	0	2	0	0	9	0	0	0	
Phases 4 3 8 2 2 1 Phases 4 8 3 6 2 2 6 Phases 4 8 8 2 2 6 Phases 4 8 8 2 2 6 Phases 6.7 6.7 226 Sien, g(s) 6.7 226 Sien, g(s) 6.7 226 Circle (s)	Turn Type	Perm			pm+pt			Perm		Perm	pm+pt		Per
Phrases 4 8 2 2 6 Green, (s) 6,7 2.26 Green, (s) 3.0 3.0 Green, (s) 6,7 3.5 Gap (vin) 2.20 881 Gap (vin) 0.08 881 Gap (vin) 0.06 Green, (s) 1,10 0.00 Green, (s) 1,10 1,10 Green, (s) 1,10	Protected Phases		4		က	œ			2		~	9	
G(s) 6,7 22.6 Gram (s) 6,7 22.6 State (s) 6,7 0.59 State (s) 4,0 6,7 0.59 Athresion (s) 3.0 4.0 6.2 Cap (vpl) 2.20 881 881 Act 60.03 60.03 881 Act 60.03 60.03 881 Act 10.0 10.0 3.4 Act 11.3 3.4 3.4 Act B A A Belay, d1 11.1 10.0 6.0 Act B A A Belay, d2 A B A B A B A B A B A B A B A B <td>Permitted Phases</td> <td>4</td> <td></td> <td></td> <td>∞</td> <td></td> <td></td> <td>2</td> <td></td> <td>2</td> <td>9</td> <td></td> <td>_</td>	Permitted Phases	4			∞			2		2	9		_
Steen, g(s) 6.7 226 Size Activation 0.17 0.59 Material (s) 4.0 4.0 5.2 Adension (s) 3.0 4.0 5.2 Cap (vph) 290 881 Port 6.08 6.03 881 Perm 0.06 6.05 881 Perm 0.06 6.05 9.05 Belay, d1 1.1 0.0 1.0 1 an Delay, d2 1.1 0.0 1.0 1 an Delay, d2 B A A Belay (s) 0.0 15.4 3.4 A LOS A B A A D Control Delay 11.0 HCM 2000 Level of Service B A D Control Delay 11.0 HCM 2000 Level of Service B A D Control Delay 11.0 HCM 2000 Level of Service B A D Control Delay 11.0 HCM 2000 Level of Service A B D Control	Actuated Green, G (s)				6.7					22.6			
Property	Effective Green, g (s)				6.7					22.6			
Time (s) 4.0 5.2 Inten (s) 4.0 5.2 Inten (s) 2.90 881 Inten (s) 2.90 881 Inten (s) 2.90 881 Intent (s) 2.90	Actuated g/C Ratio				0.17					0.59			
Action (s) 3.0 3.5 Cap (vph) 2.90 881 Cap (vph) 6.008 60.03 Cap (vph) 6.008 60.03 Cap (vph) 6.008 6.003 Cap (vph) 6.008 6.008 Cap (vph) 6.008 6.008 Cap (vph) 6.008 6.008 Cap (vph) 6.008 Cap (v	Clearance Time (s)				4.0					5.2			
Cap (vph) 290 881 Pot 60.08 881 Pot 60.08 60.03 etay, d1 14.3 3.4 an Factor 1.00 1.00 and Delay, d2 1.1 0.0 ervice B A A ervice B A A LOS A B A LOS A B A D. Ordutol Delay 11.0 HCM 2000 Level of Service B D. Ordutol Delay 11.0 HCM 2000 Level of Service B D. Ordutol Delay 11.0 HCM 2000 Level of Service B D. Ordutol Delay 11.0 HCM 2000 Level of Service B D. Ordutol Delay 11.0 HCM 2000 Level of Service B D. Ordutol Delay 11.0 HCM 2000 Level of Service B D. Ordutol Delay 11.0 HCM 2000 Level of Service B	Vehicle Extension (s)				3.0					3.5			
Prof. 6008 60.03 Perm 0.46 0.05 elay, d1 1.4.3 0.06 al Delay, d2 1.00 1.00 0.00 for evice B 15.4 3.4 Delay (s) A B A B A B Summary A B A Do Control Delay (s) 0.00 Capacity utilization 15.9% ICU Level of Service A For evice B A B A A B B A A B B A A B A A B B A A B B A A B B A For evice B A	Lane Grp Cap (vph)				290					88			
Perm 0.46 0.03 eley, d1 14.3 3.4 nn Factor 1.00 1.00 al Delay, d2 1.1 0.0 ervice 1.54 3.4 LOS A B A no Summary 1.0 HCM 2000 Level of Service B Control Delay 1.0 HCM 2000 Level of Service B Oycle Length (s) 38.5 Sum of lost time (s) 17.2 error (min) 15 ICU Level of Service A	v/s Ratio Prot				c0.08								
100 14.3 0.05 14.3 14.3 0.05 15.4 14.3 0.05 15.4 1.00 15.4 0.0	v/s Ratio Perm									00.03			
letay, d1 14.3 3.4 3.4 and letay, d1 14.3 14.3 3.4 and letay, d2 15.4 17.0 0.0 15.4 and letay (d2 15.4 17.0 0.0 15.4 and letay (s) A B A A A B B A A B B A A B B A A B B A A B B A A B B A B B A B B A B B A B B A B B A B B A B B B A B B B B A B B B B B B B A B	v/c Ratio				0.46					0.02			
1.00 1.00	Uniform Delay, d1				14.3					3.4			
11	Progression Factor				1.00					1.00			
envice B 15.4 3.4 Delay (s) 0.0 B 15.4 3.4 LOS A B A A In Summany Control Delay O'Control Delay O'Control Delay O'Control Delay O'Control Delay O'Control Delay O'Control Delay 1.10 HCM 2000 Level of Service B O'Control Delay 1.10 HCM 2000 Level of Service B O'Control Delay 1.1.2 A In Capacity Utilization 38.5 Sum of lost time (s) In Capacity Utilization 38.9% ICU Level of Service A In Capacity Utilization 15.	Incremental Delay, d2									0.0			
y (s) 0.00 B 15.4 A A A A B B A A B B A A B B A A B B A A B B A A B B A A B B A A B B A A B B A A B B A A B B A B A B B A B A B B A B B A B B A B B A B B A B B A B B A B B A B A B B A B A B B A B A B B A B A B B A B A B B A B A B B A B B A B B A B B A B B A B B A B	Delay (s)				15.4					3.4			
y (s) 0.0 15.4 3.4 (min) 0.0 15.4 3.4 (min) 15.4 A B A A A A A A A A A A A A A A A A A	Level of Service				ω					⋖			
A B A A Mannary Itrol Delay	Approach Delay (s)		0.0			15.4			3.4			0.0	
11.0 HCM 2000 Level of Service 0.20 38.5 Sum of lost time (s) 36.9% ICU Level of Service 15	Approach LOS		V			ш			⋖			V	
11.0 HCM 2000 Level of Service 0.20 38.5 Sum of lost time (s) 36.9% ICU Level of Service 15	Intersection Summary												
0.20 38.5 Sum of lost time (s) 36.9% ICU Level of Service 15	HCM 2000 Control Delay			11.0	H	:M 2000 I	evel of 5	service		В			
38.5 Sum of lost time (s) zation 36.9% ICU Level of Service	HCM 2000 Volume to Capaci	ity ratio		0.20									
tilization 36.9% 15	Actuated Cycle Length (s)			38.5	JS S	m of lost	time (s)			17.2			
	Intersection Capacity Utilizati	lon		36.9%	<u> </u>	J Level o	Service			∢			
	Analysis Period (min)			15									

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

	1	†	*	-	ţ	4	•	←	•	۶	→	•
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	44	*	je-	₩	¥C	jr.	+	*	<i>y-</i>	+	*
Traffic Volume (vph)	ස	820	145	195	615	9	150	8	370	65	30	65
Future Volume (vph)	8	820	145	195	615	9	120	8	370	65	30	65
Turn Type	pm+pt	ΑN	Perm	pm+pt	¥	Perm	pm+pt	ΑN	Perm	pm+pt	≨	Perm
Protected Phases	~	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4	∞		∞
Detector Phase	~	9	9	2	2	2	7	4	4	က	∞	00
Switch Phase												
Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	7.0	10.0	10.0
Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	10.0	34.3	34.3
Total Split (s)	11.0	45.0	45.0	14.0	45.0	45.0	11.0	40.0	40.0	24.0	53.0	53.0
Total Split (%)	9.2%	35.0%	35.0%	11.7%	37.5%	37.5%	9.5%	33.3%	33.3%	20.0%	44.2%	44.2%
Maximum Green (s)	8.0	36.1	36.1	11.0	39.1	39.1	8.0	33.7	33.7	21.0	46.7	46.7
Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	0.0	3.0	3.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes							
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	2.5	4.0	4.0
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0:0
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0
Pedestrian Calls (#/hr)		15	12		15	12		32	32		35	35
Intersection Summary												

Cycle Length: 120
Actuated Cycle Length: 120
Offset 43 (38%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated

₩ V 07 € 08 €05 • ♣26 (R)

Without Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 5

Queues 3: Kerr Street & Speers Road

	← ✓ ✓	→	•
35 953 169 227 715 12 0.07 0.58 0.22 0.51 0.34 0.01 10.3 24.6 5.9 13.1 14.8 0.0 10.3 24.6 5.9 13.1 14.8 0.0 2.6 51.5 0.8 20.1 49.2 0.0 8.6 136.1 12.3 37.1 70.8 0.0 105.0 75.0 75.0 100.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		NBR SBL SBT	BT SBR
007 058 022 051 034 001 10.3 246 5.9 13.1 148 0.0 10.3 246 5.9 13.1 148 0.0 2.6 51.5 0.8 20.1 49.2 0.0 8.6 136.1 12.3 37.1 70.8 0.0 105.0 75.0 75.0 100 494 1633 775 443 219 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	174	9/	35 76
10.3 24.6 5.9 13.1 14.8 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0		0.78 0.22 0.1	0.12 0.2
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	42.5	32.0	
10.3 24.6 5.9 13.1 14.8 0.0 2.6 515 0.8 20.1 49.2 0.0 3.8 136.1 12.3 37.1 70.8 0.0 3.9 10.5 37.1 70.8 0.0 3.9 10.5 3.0 3.9 10.0 3	0:0	0.0	
2.6 51.5 0.8 20.1 49.2 0.0 8.6 136.1 12.3 37.1 70.8 0.0 145.3 176.0 75.0 75.0 75.0 75.0 75.0 75.0 75.0 75	42.5	32.0	9.6
8.6 136.1 12.3 37.1 70.8 0.0 145.3 105.0 165.0 1	31.8	13.1	
145.3 474.4 105.0 75.0 75.0 100.0 484 1633 775 443 2109 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0	ľ	30.2 20.8 13.8	3.8 9.4
105.0 75.0 75.0 100.0 464 1033 775 443 2109 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	103.4	143.2	3.2
484 1633 775 443 2109 960 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		45.0 80.0	75.0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		426	718 637
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0	0 0	0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 0 0	0 0	0
0.07 0.58 0.22 0.51 0.34 0.01	0 0 0	0 0	0
11:0	0.01 0.56 0.07	0.63 0.18 0.0	0.05 0.12

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

Interest (who) 30 820 145 145 145 145 145 145 145 145 145 145	WBL WBT ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	WBR NB1 10 150 10 150 10 150 10 100 100 100 10	NET	Z 0000 - 1010171710 100	65 65 65 65 65 65 65 100 1.00 1.00 0.95 1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.95 1.00 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0	SBT 1900 6.3 100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	65 65 65 63 100 100 100 100 1100 1151 1151 1151 11
No. 10 No. 10	0				65 65 65 65 1900 3.0 1.00 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0	1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	65 65 1900 6.3 1.00 0.95 1.00 1.00 1.51 0.86 65 65 65
30 820 145 30 820 145 1900 1900 1900 1900 1 100 0.95 1.00 1 100 1.00 1.00 1 100 1.00 1.00 1 100 1.00 1.	2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3				65 1900 3.0 1.00 1.00 0.96 1.00 0.95 1648 1648 1674 0.73 0.73 0.73 0.73 3.6 76 0.86 76 0.86 76 0.86 0.86 0.86 0.86 0.86 0.86 0.73 0.73 0.73 0.73 0.73 0.73 0.73 0.73	30 1900 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	65 65 6.3 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0
30 820 145 1900 1900 1900 1900 1900 1900 1900 190	2 0 2 - 2 - 2 - 3 - 3 - 3 - 3 - 3 -				65 1900 3.0 1.00 1.00 0.96 1.00 0.73 1.07 1.07 0.73 0.73 7.6 0.73 3.6 1.07 1.07 1.07 1.07 1.07 1.07 1.07 1.07	30 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	65 6.3 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.
1900 1900 1900 1900 1900 1900 1900 1900	5 0				3.0 1.00 1.00 1.00 0.95 1.00 1.00 1.00 0.95 1.00 0.35 7.74 0.86 7.6 7.6 7.6 3.5	6.3 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 3.5 0.86	6.3 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.
3.0 5.9 5.9 3.0 0.95 1.00 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	9				3.0 1.00 1.00 0.96 1.00 0.95 1.274 0.78 0.86 76 76	6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	6.3 1.00 0.95 1.00 1.00 1.511 1.00 1.511 76 65
HF 0.86 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	2				1.00 1.00 1.00 1.00 1.95 1648 0.73 1274 0.86 76 76 76	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 0.95 0.85 1.00 1.00 1.511 0.86 65 65
H 1.00 1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		ء ا			0.96 0.95 1.00 0.73 1.274 0.86 0.86 76 35	1.00 1.00 1.00 1.00 1.00 1.00 1.00 3.5 0.86	0.95 1.00 1.00 1.00 1.00 1.00 76 65
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00					0.95 1.00 1.00 1.00 1.00 1.73 1.274 0.86 0.86 76 35	1.00 1.00 1.00 1.00 1.00 3.5 0.00	0.85 1.00 1.00 1.00 1.00 1.00 76 65
1.00 1.00 0.85 1 1.00 1.00 0.85 1 1.09 33.78 1437 11 1.09 33.78 1437 11 1.00 0.83 1.00 1.00 0.85 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		ء ا			1.00 1.00 1.648 0.73 1.274 0.86 76 0 76 35	1.00 1.00 1.00 1.00 0.86 35	0.85 1.00 1.51 1.00 1.511 0.86 76 65
(a) 10.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	- 4 - 4 0 1 - 1 -	ء ا			0.95 1648 0.73 1274 0.86 76 76 35	1.00 1.00 1.00 1.00 35 35	1.00 1.00 1.00 1.00 76 65 65
1799 3378 1437 1799 3378 1437 179 3378 1437 179 179 179 179 179 179 179 179 179 17	3 - 8 0 1 1 1	م ا			0.86 0.86 0.86 0.86 76 0 76 35	1.00 1.00 1.00 35 35	1.00 1.01 1.00 76 65 65
HF 0.86 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0		م ا			0.73 0.86 0 0 76 76 35	1.00 1845 0.86 35 35	0.86 76 65 111
HF 086 086 086 086 086 086 086 086 086 086		م ا			0.86	35	76 76 65 11
ph) 0 83 169 169 169 169 169 169 169 169 169 169		ā			76 76 35	35 0 35	76
ph) 0 0 83 ph) 35 953 86 3 10 4 0 77 0 6% 77% 0 4 0 0 10 pm+pt NA Perm pri 1 6 6 6 6 (s) 61.0 56.7 56.7 7 3) 61.0 56.7 56.7 7 3) 61.0 56.7 56.7 7 3) 61.0 56.7 56.7 7 3) 25 55.7 56.7 7 30 5.9 5.9 5.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6.9 6		g.			0 76 35	0 2	11
ph) 35 953 86 17 10 10 10 10 10 10 10 10 10 10 10 10 10		튭		32	35	L	11 %
15 10 10 10 10 10 10 10 10 10 10 10 10 10		튭		35	35	35	20
(a) 6% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7% 7%		nd					24
) pm+pt NA Perm prr 1 6 6 6 6 6 6 7 7 7 7 7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9		l g		2%	2%	3%	2%
(s) 61.0 56.7 56.7 7 7 1 (s) 61.0 56.7 56.7 1 (s) 61.0 56.7 56.7 1 (s) 61.0 56.7 1 (s)		l		0	0	0	0
(s) 61.0 56.7 56.7 7 7 (s) 61.0 56.7 56.7 7 7 0.51 0.47 0.47 0.47 0.48 0.00 0.028 0.00 0.028 0.00 0.00 0.00 0			NA	Perm	pm+pt	¥	Perm
(s) 61.0 56.7 56.7 7 (s) 61.0 56.7 56.7 7 (s) 61.0 56.7 64.7 04.7 04.7 04.7 04.7 04.7 04.7 04.7 0			7 4		က	œ	
(s) 61.0 56.7 56.7 7 (s) 61.0 56.7 61.0 51.0 51.0 51.0 51.0 51.0 51.0 51.0 5				4	∞		∞
(s) 61.0 56.7 56.7 7 0.51 0.47 0.47 0.47 0.83 0.59 5.9 (s) 2.5 5.5 5.5 5.5 (s) 404 1596 678 4 (s) 0.00 60.28 60 0.04 0.06 0.06		71.1 27.8		18.7	25.0	17.3	17.3
0.51 0.47 0.47 0.47 0.30 0.59 5.9 5.9 5.9 5.9 5.9 5.9 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0				18.7	25.0	17.3	17.3
30 5.9 5.9 s) 2.5 5.5 5.5) 404 1596 678 4 0.00 c0.28 cd	C	J	C	0.16	0.21	0.14	0.14
(vph) 2.5 5.5 5.5 (vph) 404 1596 678 0.00 c0.28 0.04 0.06				6.3	3.0	6.3	6.3
(vph) 404 1596 678 0.00 c0.28 0.04 0.06	2.5 5.5			4.0	2.5	4.0	4.0
0.00 c0.28 0.04 0.06	.,	885 312		222	588	265	217
0.04 0.00	.08 0.21		4 0.02	0 0	0.02	0.02	5
000		٥		0.07	0.04	4	0.0
V/C Katto 0.03 0.09 0.00 0.13 0.55	.53 0.35	0.00	70.0	0.42	0.20	0.13	0.00
0.00 1.05				43.7	4.6	6.4.0	5.45
0.37 0.30 1.03				1.00	00.1	00.0	9. 5
144 226 190		V	7	47.5	30.4	45.1	44.4
Savice				2 -	2 -	2	
(s) 21.8	12.9		45.7	1		42.7	
Approach LOS C	Ф		٥			۵	
Intersection Summary							
HCM 2000 Control Delay	HCM 2000 I	HCM 2000 Level of Service		c			
pacity ratio		5					
	Sum of lost t	time (s)		18.2			
Utilization 68.0	ICU Level of Service	f Service		O			
Analysis Period (min)							

Without Kerr St Improvements BA Group - EFS

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Timings 4: Dorval Road & Speers Road

Future Total AM (Phase 2) Kerr St Closure	Uhner Kerr Village (812/L01)
AM (Phas	
Future Total	

	4		,	١	1	4	١	4	_	-		
	\	Ť	>	-	ļ	/		_	*	+	*	
ane Group	BE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
ane Configurations	ř.	‡	¥C.	*	‡	¥C.	*	₩.	*	‡	*	
raffic Volume (vph)	425	605	40	80	400	440	20	875	382	575	270	
-uture Volume (vph)	425	902	40	80	400	440	70	875	382	575	270	
urn Type	Prot	Ϋ́	Perm	pm+pt	≱	vo+mq	pm+pt	≨	pm+pt	Ν	Perm	
Protected Phases	7	4		က	∞	~	2	2	-	9		
ermitted Phases			4	∞		∞	2		9		9	
Vetector Phase	7	4	4	က	∞	~	2	2	_	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
otal Split (s)	21.0	20.0	20.0	13.0	45.0	12.0	11.0	45.0	12.0	46.0	46.0	
otal Split (%)	17.5%	41.7%	41.7%	10.8%	35.0%	10.0%	9.5%	37.5%	10.0%	38.3%	38.3%	
Maximum Green (s)	17.0	43.0	43.0	9.0	35.0	8.0	7.0	38.0	8.0	39.0	39.0	
'ellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1:0	1.0	3.0	1.0	3.0	3.0	
ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
.ead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
-ead-Lag Optimize?	Yes											
(ehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
ime Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0	
ime To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min	None	C-Min	C-Min							
Valk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	ည		2			2		2	2	
ntersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												

Actuated Oyole Length: 120
NBTLs 41 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green Natural Oyole: 145
Control Type: Actuated-Coordinated

₽ € Ø3 Splits and Phases: 4: Dorval Road & Speers Road ⁴√ Ø2 (R) ↑ øs • • øe (R)

Without Kerr St Improvements BA Group - EFS

Queues 4: Dorval Road & Speers Road

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

~ı	ı		1													
Jpper Kerr Village (8124-01	_	SBR	93	0.38	4.1	0.0	4.1	14.2	m26.5			992	0	0	0	0.38
(err Villag	*	SBT SI		0.42 0.			11.3		62.5 m26	494.4		1489 7	0	0	0	0.42 0.
Upper I	→	SBL S			192.2		192.2			49	110.0	313 14	0	0	0	1.34 0.
	,	NBT S		0.98			62.7 19	131.6 ~104.4	7.2 #206.8	621.6	1	1111	0	0	0	0.98
	_	NBL N		0.20 0.			18.1 62	8.4 13	19.6 #177.2	62	70.0	379 11	0	0	0	0.20 0.
	* ار	WBR N		0.75 0.			28.0 18		98.4 19		55.0 70	639 3	0	0	0	0.75 0.
	_	WBT WI					49.3		65.4 9	472.1	Ω	949 6	0	0	0	0.46 0.
	•	WBL W					22.6 4			47	85.0		0	0	0	0.34 0
	, *	EBR M					0.3		0.0		8 0.09	009	0	0	0	0.07 0
ad	†	EBT					42.7		83.0	12.3	•	1192	0	0	0	0.55 (
ers Ro	•	EBL		96.0				. 26.4	#88.1	4	0.09	481 1	0	0	0	96.0
& Spe													.=	_		
4: Dorval Road & Speers Road			ane Group Flow (vph)		>			lueue Length 50th (m)	Queue Length 95th (m)	Dist (m)	ngth (m)	ty (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Reductn	Ratio
Dorva		ane Group	ne Group	/c Ratio	control Delay	ueue Delay	otal Delay	eue Leng	eue Leng	nternal Link Dist (m)	urn Bay Length (m)	Sase Capacity (vph)	Invation C	Illback Ca	Storage Cap Reductn	Reduced v/c Ratio
4: D		Lane	Lane	V/c Rg	Contr	Quen	Total	Quen	Quen	Intern	Turn	Base	Starva	Spillb	Stora	

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

Queue shown is maximum after two cycles.

Queue shown is maximum after two cycles.

The control of the cycles is a cycles.

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

	1	†	1	-	ţ	4	•	—	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	-	₩	R _	F	₩	X	y -	4₽		<u>r</u>	44	*
Traffic Volume (vph)	425	605	40	80	400	440	20	875	125	385	575	270
Future Volume (vph)	425	605	40	8	400	440	20	875	125	382	575	270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	0.1	1.00	1.00	1.00	1.00	0.99	1.00	1.00		1.00	00.1	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	00.1	1.00
	1.00	1.00	0.85	1.00	1.00	0.85	1.00	86.0		1.00	00.1	0.85
Fit Protected	0.95	00.1	00.1	0.95	0.T	00.1	0.95	0.1		0.95	1.00	9.1
Satd. Flow (prot)	3400	3329	1482	1656	3256	1494	1786	3481		1687	3238	1417
FIt Permitted	0.95	1.00	1.00	0.32	1.00	1.00	0.41	1.00		0.10	1.00	1.00
Satd. Flow (perm)	3400	3329	1482	228	3256	1494	780	3481		169	3539	1417
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	462	658	43	87	435	478	9/	921	136	418	625	293
RTOR Reduction (vph)	0	0	31	0	0	20	0	10	0	0	0	172
Lane Group Flow (vph)	462	658	12	87	435	408	9/	1077	0	418	625	121
Confl. Peds. (#/hr)	2					2	2					2
Heavy Vehicles (%)	3%	%8	%6	%6	10%	%/	%	5%	%0	%/	5%	12%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	NA	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	Ν	Perm
Protected Phases	7	4		က	00	~	2	2		-	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	17.0	33.6	33.6	33.6	25.1	43.0	44.2	38.0		59.9	49.7	49.7
Effective Green, g (s)	17.0	33.6	33.6	33.6	25.1	43.0	44.2	38.0		59.9	49.7	49.7
Actuated g/C Ratio	0.14	0.28	0.28	0.28	0.21	0.36	0.37	0.32		0.50	0.41	0.41
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	3.0	5.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	481	932	414	234	681	535	339	1102		310	1465	286
v/s Ratio Prot	c0.14	c0.20		0.03	0.13	0.11	0.01	0.31		00.20	0.18	
v/s Ratio Perm			0.01	0.08		0.16	0.07			00.47		0.09
v/c Ratio	96.0	0.71	0.03	0.37	0.64	0.76	0.22	0.98		1.35	0.43	0.21
Uniform Delay, d1	51.2	38.8	31.4	33.0	43.3	34.0	25.0	40.6		37.2	25.0	22.5
Progression Factor	1:00	1.00	1.00	0.88	1.06	0.91	1.00	1.00		0.84	0.40	0.94
Incremental Delay, d2	34.0		0.1	0.	2.6	6.1	0.3	22.3		171.1	9.0	9.0
Delay (s)	82.2	41.8	31.4	30.0	48.5	36.9	25.3	62.8		202.2	10.7	21.7
Level of Service	ட	Δ	ပ	ပ	Ω	□	ပ	ш		ட	ш	ပ
Approach Delay (s)		57.5			41.3			60.4			73.0	
Approach LOS		ш						ш			ш	
Intersection Summary												
HCM 2000 Control Delay			59.2	Ť	CM 2000	HCM 2000 Level of Service	Service		ш			
HCM 2000 Volume to Capacity ratio	y ratio		1.17									
Actuated Cycle Length (s)			120.0	S	um of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	L		93.8%	2	:U Level	ICU Level of Service			ш			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

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Without Kerr St Improvements BA Group - EFS

Timings Future Total AM (Phase 2) Kerr St Closure 5: St. Augustine Drive & Speers Road Upper Kerr Village (8124-01)

→	SBT	÷	0	0	NA	9		9		5.0	24.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3			3.0	3.0	0.0	0.0	None	7.0	11.0	0					
۶	SBL	je-	32	32	Perm		9	9		2.0	24.3	38.0	31.7%	31.7	3.3	3.0	0.0	6.3			3.0	3.0	0.0	0.0	None	7.0	11.0	0				Green	
4	NBR	¥L.	20	20	Perm		2	2			24.3						0.0				3.0	3.0	0.0	0.0	None	7.0	11.0	0				, Start of	
ţ	WBT	₹	870	870	Ϋ́	∞		∞			23.9					2.2	0.0	5.9			3.0	3.0	0.0	0.0	C-Min	7.0	11.0	0				nd 8:WBT	
†	EBT	₹	096	096	ΑN	4		4		2.0	23.9										3.0	3.0	0.0	0.0	C-Min	7.0	11.0	0				EBTL a	
4	EBF	<u></u>	45	45	Perm		4	4		2.0	23.9	82.0	%8.3%	76.1	3.7	2.2	0.0	5.9			3.0	3.0	0.0	0.0	S-Min	7.0	11.0	0				to phase	linated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset 51 (43%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	Natural Cycle: 35 Control Type: Actuated-Coordinated

Splits and Phases: 5: St. Augustine Drive & Speers Road



Without Kerr St Improvements BA Group - EFS

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Queues 5: St. Augustine Drive & Speers Road

Phase 2) Kerr St Closure	(10,000)
r St C	1,511
2) Ker	/
=	-
AM	
Tota	
Future	

	1	†	Ļ	•	۶	→	
Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
Lane Group Flow (vph)	51	1108	995	23	40	26	
v/c Ratio	0.12	0.39	0.35	0.11	0.33	0.41	
Control Delay	1.9	2.0	2.2	<u>†</u> .	59.8	8.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	1.9	2.0	2.2	[.	29.8	8.2	
Queue Length 50th (m)	<u>د.</u>	16.9	17.5	0.0	9.5	0.0	
Queue Length 95th (m)	m1.9	m17.8	20.3	0.0	19.4	0.9	
Internal Link Dist (m)		472.1	42.5			93.6	
Turn Bay Length (m)	20.0						
Base Capacity (vph)	442	2851	2852	493	476	527	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.12	0.39	0.35	0.05	0.08	0.18	
Intersection Summary							
1/climo for 05th m	i orioris olit	o motor o	aşou. , iq	0000	-		
m volume for 95m percentile queue is metered by upstream signal	ı ananb allı	Sillererer	ny upstru	adili sigir			

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure 5: St. Augustine Drive & Speers Road

	^	Ť	~	•	,	/		_	•	۶	→	•
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	₩			₩				R.	F	£	
Traffic Volume (vph)	45	096	15	0	870	2	0	0	20	35	0	85
Future Volume (vph)	42	096	15	0	870	2	0	0	20	32	0	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Lane Util. Factor	1:00	0.95			0.95				1.00	1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
±4	1.00	1.00			1.00				0.86	1:00	0.85	
FIt Protected	0.95	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (prot)	1798	3431			3434				1565	1805	1615	
Flt Permitted	0.28	1.00			1.00				1.00	0.95	1.00	
Satd. Flow (perm)	532	3431			3434				1565	1805	1615	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	21	1091	17	0	686	9	0	0	23	40	0	97
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	21	0	06	0
Lane Group Flow (vph)	21	1108	0	0	995	0	0	0	5	40	7	0
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehicles (%)	%0	2%	%0	%0	2%	2%	%0	%0	2%	%0	%0	%0
Turn Type	Perm	ΑA			ΑN				Perm	Perm	≱	
Protected Phases		4			∞						9	
Permitted Phases	4								2	9		
Actuated Green, G (s)	99.7	99.7			266				8.1	8.1	8.1	
Effective Green, g (s)	2.66	2.66			2.66				8.1	8.1	8.1	
Actuated g/C Ratio	0.83	0.83			0.83				0.07	0.07	0.07	
Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
Lane Grp Cap (vph)	442	2850			2853				105	121	109	
v/s Ratio Prot		c0.32			0.29						0.00	
v/s Ratio Perm	0.10								0.00	c0.02		
v/c Ratio	0.12	0.39			0.35				0.01	0.33	90.0	
Uniform Delay, d1	1.9	2.5			2.4				52.2	53.4	52.4	
Progression Factor	0.72	99.0			0.74				1.00	1.00	1.00	
Incremental Delay, d2	0.2	0.2			0.3				0.1	1.6	0.2	
Delay (s)	1.6	1.9			2.1				52.3	22.0	52.6	
Level of Service	V	∢			∢				□	□	۵	
Approach Delay (s)		1.9			2.1			52.3			53.3	
Approach LOS		⋖			∢			۵			۵	
Intersection Summary												
HCM 2000 Control Delay			7.	Ĭ	HCM 2000 Level of Service	o yol of O	acivia		٥			
HCM 2000 Volume to Capacity ratio	ity ratio		0.38	=	7007	5 5 5	2		ς.			
Actuated Cycle Length (s)			120.0	ō.	Sum of lost time (s)	fime (s)			12.2			
Intersection Canacity Hilization	20.00		50.8%	3 ⊆	ICLL Level of Service	Service			į			
man finada in managari			200	2					:			
			4									

Without Kerr St Improvements BA Group - EFS

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Timings

Future Total AM (Phase 2) Kerr St Closure

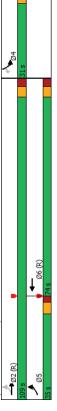
6: Speers Road/Cornwall Road & Cross Avenue

Upper Kerr St Closure

ane Group	√ ■	† a	₩ MBT	<u></u> BB Marketine Ma	SBR	
Larie Comigurations Traffic Volume (vph)	135	1125	→ 242	<u>د</u> د	5 02	
Future Volume (vph)	135	1125	545	2	205	
Furn Type	pm+pt	Α	Ϋ́	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	S	2	9	4	4	
Switch Phase						
Minimum Initial (s)	0.9	38.0	38.0	10.0	10.0	
Minimum Split (s)	12.0	47.6	47.6	15.8	15.8	
otal Split (s)	32.0	109.0	74.0	31.0	31.0	
otal Split (%)	25.0%	%6.77	52.9%	22.1%	22.1%	
Maximum Green (s)	29.0	102.4	67.4	25.2	25.2	
'ellow Time (s)	4.0	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.0	5.9	2.9	2.5	2.5	
ost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
otal Lost Time (s)	0.9	9.9	9.9	5.8	5.8	
-ead/Lag	Lead		Lag			
-ead-Lag Optimize?	Yes		Yes			
/ehide Extension (s)	3.5	2.0	2.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
ime Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Fime To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min	C-Min	None	None	
Walk Time (s)		10.0	10.0			
Flash Dont Walk (s)		31.0	31.0			
Pedestrian Calls (#/hr)		2	2			
ntersection Summary						
Oycle Lenath: 140						

Actuated Cycle Length: 140
Offset: 99 (71%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



Without Kerr St Improvements BA Group - EFS

Queues
Future Total AM (Phase 2) Kerr St Closure
6: Speers Road/Comwall Road & Cross Avenue
Upper Kerr Village (8124-01)

	1	†	ţ	٠	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	159	1324	999	9	241	
v/c Ratio	0.26	0.46	0.26	0.02	0.58	
Control Delay	3.0	3.5	6.4	8.09	13.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	3.0	3.5	6.4	8.09	13.1	
Queue Length 50th (m)	5.9	39.5	27.7	1.6	0.0	
Queue Length 95th (m)	9.3	45.4	35.3	2.8	11.1	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	763	2909	2539	324	299	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.46	0.26	0.02	0.36	
Intersection Summary						

Without Kerr St Improvements

BA Group - EFS

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HCM Signalized Intersection Capacity Analysis Futul 6: Speers Road/Comwall Road & Cross Avenue

Capacity Analysis Future Total AM (Phase 2) Kerr St Closure and & Cross Avenue Upper Kerr Village (8124-01)

Movement EBL EBT WBT WBR SBL SBR Lane Configurations ↑	
18	
135 1125 545 20 1900 1900 1900 1900 1900 1900 1900 190	
1900 1900 1900 1900 1900 1900 1900 1900	
1900 1900 1900 1900 1900 1900 1900 1900	
100	
1.00	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	
1.00 1.00 0.39 1.00 1.00 0.39 1.60 1.00 0.39 1.65 3471 3448 0.37 1.00 1.00 654 3471 3448 0.37 1.00 1.00 0.0 0 0 1 1 24 0.0 0 0 0 1 1 24 0.0 0 0 0 0 1 1 24 0.0 0 0 0 0 1 1 24 0.0 0 0 0 0 0 0 1 24 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
1885 3471 3448 1885 3471 3448 0.37 1.00 1.00 1895 3471 3448 1895 3471 3448 1896 3.87 3.84 6.1 24 189 1324 664 0 189 1324 664 0 189 1324 664 0 189 1324 664 0 189 1324 664 0 189 1324 664 0 189 1324 664 0 189 1324 666 0 189 1473 1473 143.0 189 1473 1473 143.0 189 189 189 189 189 189 189 189 189 189	
He85 3471 3448 654 3471 3448 F 0.85 0.85 0.85 0.85 0.85 T 100 100 E 159 1324 641 24 T 173 132 133 T 173 133 133 T 173 143 143 143 143 143 T 173 143 143 143 143 143 T 173 143 143 143 143 143 143 143 143 143 14	
6.37 100 100 6.65 3.47 3.448 6.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0	
F	
HF 085 085 085 085 085 085 085 085 085 085	
159 1324 641 24 20 0 0 1 0 5 0 0 1 0 6 0 1 0 0 7% 4% 4% 5% 17% 4% 4% 5% 2 2 6 2 6 2 6 3 5 50 50 0 208 2536 0 0 208 2536 0 0 2 0 3 0 5 0 3 0 5 0 3 2 4 3.0 6.1 1.00 1.00 1.00 2 6 3.5 6.3 2 7 8 0.3 2 8 0.3 3 8 0.1 3 9 0.2 4 8 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	
bh) 159 1324 664 0 0 1 0 0 0 1 0	
bh) 159 1324 664 0 7% 4% 4% 5% 7% 4% 4% 5% 5 7 8 64 86 7 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 113.0 117.3 117.3 117.3 117.3 113.0 117.3 117.	
pm+pt NA 4% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	
pm+pt NA NA 5% 2% 5% 17.3 103.0 17.3 117.3 103.0 17.3 1	
s) 117.3 117.3 103.0 1 117.3 117.3 103.0 0.84 0.84 0.74 0.08 0.80 2536 0.02 0.38 0.19 0.20 0.26 0.26 2.4 0.41 1.00 1.00 1.00 2.5 0.3 2.6 0.3 2.6 0.3 2.7 0.3 2.8 0.3 2.8 0.3 2.8 0.3 2.8 0.3 2.8 0.3 2.8 0.3 2.9 0	
5 2 6 2 2 6 3 117.3 117.3 103.0 9 117.3 117.3 103.0 0.84 0.84 0.74 0.84 0.84 0.74 0.85 5.0 5.0 0.02 2908 2536 0.02 0.03 0.19 0.20 0.26 0.46 0.26 0.26 0.46 0.26 0.26 0.46 0.26 0.26 0.46 0.26 0.27 0.3 0.5 0.3 0.3 0.3 0.5 0.3 0.3 0.3 0.5 0.3 0.3 0.3 0.5 0.3 0.3 0.3 0.5 0.3 0.3 0.3 0.3 0.5 0.3 0.3 0.3 0.3 0.5 0.3	
s) 117.3 103.0 117.3 117.3 103.0 0.84 0.84 0.74 0.86 0.66 0.66 0.02 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.4 0.4 0.5 0.7 0.7 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.8 0.9 0.0 0.8 0.9 0.0 0.8 0.9 0.9 0.0 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.8 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	
s) 117.3 117.3 103.0 117.3 117.3 103.0 0.84 0.74 0.74 0.84 0.74 0.74 0.84 0.74 0.74 0.84 0.74 0.74 0.80 2008 2536 0.02 0.38 0.19 0.20 0.26 0.26 2.4 3.0 6.1 1.00 1.00 1.00 2. 0.3 0.5 0.3 2. 6 3. 6 6.3 A A A A A A A A A A A A A A A A A A A	
1) 117.3 117.3 118.0 10.4 0.8 0.74 6.0 6.6 6.6 5.0 6.0 2908 2536 0.02 0.38 0.19 0.20 0.26 0.26 2.4 3.0 6.1 1.00 1.00 1.00 2.5 3.5 6.3 A A A A A A A A A A A A A A A A A A A	
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60 66 66 66 66 66 66 66 66 66 66 66 66 6	
25 5.0 5.0 609 2998 2536 002 2038 0.19 0.20 0.46 0.26 2.4 3.0 6.1 1.00 1.00 1.00 2.2 6.3 6.3 A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A.A	
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0.02 c0.38 0.19 0.20 0.20 0.26 0.46 0.26 0.26 0.3 0.5 0.3 0.5 0.3 0.5 0.3 2.6 3.5 A A A A A A A A A A A A A A A A A A A	
0.20 0.46 0.26 0.26 0.26 0.26 0.26 0.30 0.100 1.00 1.00 1.00 1.00 1.00 1.0	
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2 0.3 0.5 0.3 2.2 2.6 3.5 6.3 A A 3.4 6.3 A A A A A A A A A A A A A A A A A A A	
26 3.5 6.3 A A A A A A A A A A A A A A A A A A A	
A A A A A A A A A A A A A A A A A A A	
3.4 6.3 A A A Y 10.1	
y Y Jolav	
404	
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0	Service B
pacity ratio 0.45	
140.0	18
Utilization 65.3	O
Analysis Period (min) 15	

Without Kerr St Improvements BA Group - EFS

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HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure 7: Kerr Street & Prince Charles Drive ∪

> →	SBL SBT SBR	4	40 315 5	315	Free	%0	0.84	48 375 6						None		127	0.90	643			547	4.2		2.3	95	873														
←	NBT NBR	4	510 5	510	Free	%0	0.84 0.8							None		238																								
1	WBR NBL		40 5	40			0	48 6									0.90	640 396			544			3.4	66 06	458														
<i>></i>	WBL WBT	4	5 0		Stop		0.84	0 9	30	3.6	1.1	3					0.93 0.93	1132			974			3.5	97 100	192	SB 1	429	48			0.05			⋖					
<i>†</i>	EBT EBR	4	0 5		Stop	%0	0.84 0.84	9 0	15	3.6	1.	_					0.93 0.95	1144			•	6.5 6.5		4.0	100 99	208	WB1 NB1		9 9	48	397	0.14 (3.5	15.5		15.5	O		17	
1	EBL	S	J/h) 5				0.84	9 (hc			(S)		(<i>ا</i>		<u>(</u>		ked 0.93		<u> </u> 0	Ю	7	7.1		3.5	96		EB 1	12	9	9	263			19.3		19	O	arv		
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	% eauf enenb 0d	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	650000000000000000000000000000000000000

Without Kerr St Improvements
BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure 8: Kerr Street & Elmwood Road

																																								A	
*	SBR		30	30			0.85	32																																ICU Level of Service	
→	SBT	2	285		Free		0.85	335						None		262																								CU Level	
—	NBT	4	490	490	Free	%0	0.85	929	2	3.6	- -	0		None		103																								≚	
•	NBL		5	2			0.8	9										330			390	4.1			66	1158	SB 1	370	0	35	1700	0.22	0.0	0.0	d	0.0			0.7	41.3%	15
<u> </u>	EBR		10	10			0.85											378			378	6.2			86	658	NB 1	582	9	0	1158		0.1		∀ ?	0.1					
1	EBL	>	20	20	Stop	%0	0.85	24	20	3.6	#	2					0.87	096			881	6.4		3.5	9	272	EB 1	36	24	12	338	0.11	2.7	16.9	O	16.9	O			tilization	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF(s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	SH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Without Kerr St Improvements BA Group - EFS

Timings
Future Total AM (Phase 2) Kerr St Closure
9: Kerr Street & Stewart Street

	4	†	-	Ļ	✓	←	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations		4		4		4		(
Traffic Volume (vph)	32	22	20	32	2	385	40	215	
Future Volume (vph)	32	52	20	32	2	385	40	215	
Turn Type	Perm	Ϋ́	Perm	Ϋ́	Perm	Ϋ́	pm+pt	NA	
Protected Phases		4		∞		2	_	9	
Permitted Phases	4		∞		2		9		
Detector Phase	4	4	∞	∞	2	2	~	9	
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	24.0	24.0	0.9	24.0	
Minimum Split (s)	30.0	30.0	30.0	30.0	32.0	32.0	10.0	32.0	
Total Split (s)	30.0	30.0	30.0	30.0	35.0	35.0	10.0	45.0	
Total Split (%)	40.0%	40.0%	40.0%	40.0%	46.7%	46.7%	13.3%	%0.09	
Maximum Green (s)	24.6	24.6	24.6	24.6	29.6	29.6	7.0	39.6	
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.0	3.3	
All-Red Time (s)	2.1	2.1	2.1	2.1	2.1	2.1	0.0	2.1	
Lost Time Adjust (s)		0.0		0.0		0.0		0.0	
Total Lost Time (s)		5.4		5.4		5.4		5.4	
Lead/Lag					Lag	Lag	Lead		
Lead-Lag Optimize?					Yes	Yes	Yes		
Vehicle Extension (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Time To Reduce (s)	0:0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	C-Min	C-Min	None	C-Min	
Walk Time (s)	10.0	10.0	10.0	10.0	10.0	10.0		10.0	
Flash Dont Walk (s)	13.0	13.0	13.0	13.0	14.0	14.0		14.0	
Pedestrian Calls (#/hr)	20	20	20	20	33	32		35	
Intersection Summary									
Cycle Length: 75									
Actuated Cycle Length: 75									
Offset: 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	to phase	2:NBTL	and 6:SB	rL, Start o	of Green				
Natural Cycle: 75									
Control Type: Actuated-Coordinated	dinated								

Spills and Phases: 9: Kerr Street & Stewart Street

Without Kerr St Improvements

BA Group - EFS

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Queues Future Total AM (Phase 2) Kerr St Closure 9: Kerr Street & Stewart Street

	†	ţ	•	→	
Lane Group	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	62	152	200	348	
v/c Ratio	0.28	0.40	0.43	0.34	
Control Delay	23.8	14.2	9.1	8.2	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	23.8	14.2	9.1	8.2	
Queue Length 50th (m)	9.6	8.7	21.9	13.6	
Queue Length 95th (m)	15.4	16.8	55.5	37.3	
Internal Link Dist (m)	71.6	36.6	141.0	79.0	
Turn Bay Length (m)					
Base Capacity (vph)	429	229	1155	1013	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.17	0.27	0.43	0.34	
Infersection Cummany					

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 9: Kerr Street & Stewart Street

7	T SBR	١.	5 30		0 1900	4	0	6	0	6	6	7	6		2 0.82		t 4		%9 %	4 0	4	9		0	0	5	4 C			2	4		0	2	0	⋖ "	0	V						
→	SBL SBT	3	40 215		1900 1900	5.4	1.00	0.99	1.00	0.9	0.99	1717	0.89	`	0.82 0.82		344		2% 6%	0	pm+pt NA	_	9	49.0	49.0	0.65	5.4	1008		0.22	0.34	2.8	1.00	0.2	0.9		0.0							
•	NBR		20	20	1900										0.82	+ 7	o c	35.0	%	0	۵																			В		13.8	Ф	
←	NBT	÷	382	382	1900	5.4	1:00	1.00	1.00	0.99	1.00	1773	1.00	1768	0.82	0.4	400	2	%9	0	AA	2		49.0	49.0	0.65	5.4	1155		c0.28	0.43	6.3	1:00	1.2	7.5	۲ کا ا	Ç. /	⋖						
€	NBL		5		1900										0.0		0 0		2		Perm		2																	f Service		_	e	
4	- WBR	١.	9 20		1900	_	_				_				0.82				1																					HCM 2000 Level of Service		Sum of lost time (s)	ICU Level of Service	
\	L WBT	4	20 35		~	5.4	1.00	0.97	1.00	0.92	0.99	1612	0.94		2 0.82		8 8		0% 2%		n NA	80	8	15.2	15.2	0.20	5.4	310		c0.05	0.27	25.2	1:00	9.0	25.9	O	75.9			HCM 20		Sum of I	ICU Leve	
,	EBR WBI		5 2		1900 1900										0		o c				Perm																			10.9	0.41	75.0	62.7%	45
 	EBT	4	52			5.4	1.00	1.00	0.99	0.99	0.97	1701	0.79		0.82 0	S 11	° 72			2	AA	4		15.2	15.2	0.20	5.4	281		0.05	0.26	25.2	1.00	0.7	25.9	0 8	25.9	ပ		1	0	7	62.	
۸.	EBL		32	32	1900										0.82	2 c	o c	2 0	2%	0	Perm		4																		y ratio		Ē	
	Movement	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Ideal Flow (vphpl)	Total Lost time (s)	Lane Util. Factor	Frpb, ped/bikes	Flpb, ped/bikes	Fit	Fit Protected	Satd. Flow (prot)	FIt Permitted	Satd. Flow (perm)	Peak-hour factor, PHF	Adj. riow (vpii)	Lane Group Flow (vph)	Confl Peds (#/hr)	Heavy Vehicles (%)	Bus Blockages (#/hr)	Turn Type	Protected Phases	Permitted Phases	Actuated Green, G (s)	Effective Green, g (s)	Actuated g/C Ratio	Clearance Time (s)	Lane Grp Cap (vph)	v/s Ratio Prot	v/s Ratio Perm	v/c Ratio	Uniform Delay, d1	Progression Factor	Incremental Delay, d2	Delay (s)	Level of Service	Approach Delay (s)	Approach LOS	Intersection Summary	HCM 2000 Control Delay	HCM 2000 Volume to Capacity ratio	Actuated Cycle Length (s)	Intersection Capacity Utilization	Analyzia Dariod (min)

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Timings 10: Dorval

Future Total AM (Phase 2) Kerr St Closure	Upper Kerr Village (8124-01)
	ral Road & Wyecroft Road

	1	†	-	ţ	•	—	۶	→	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	
Lane Configurations	K	*	r	*	r	441	K	4413	
Traffic Volume (vph)	215	02	20	65	115	1540	110	1195	
Future Volume (vph)	215	70	20	65	115	1540	110	1195	
Turn Type	Prot	Ϋ́	pm+pt	ΑN	pm+pt	¥	Prot	₹	
Protected Phases	7	4	က	∞	2	2	~	9	
Permitted Phases			∞		2				
Detector Phase	7	4	က	∞	ა	2	Ψ.	9	
Switch Phase									
Minimum Initial (s)	7.0	10.0	7.0	10.0	7.0	20.0	7.0	20.0	
Minimum Split (s)	12.0	25.0	12.0	25.0	12.0	41.0	12.0	41.0	
Total Split (s)	21.0	40.0	21.0	40.0	17.0	45.0	17.0	45.0	
Total Split (%)	17.5%	33.3%	17.5%	33.3%	14.2%	35.0%	14.2%	35.0%	
Maximum Green (s)	16.0	33.0	16.0	33.0	12.0	35.0	12.0	35.0	
Yellow Time (s)	3.0	4.0	3.0	4.0	3.0	4.0	3.0	4.0	
All-Red Time (s)	2.0	3.0	2.0	3.0	2.0	3.0	2.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	2.0	7.0	2.0	7.0	2.0	7.0	2.0	7.0	
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehide Extension (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0:0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	C-Min	None	C-Min	
Walk Time (s)		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)		11.0		11.0		27.0		27.0	
Pedestrian Calls (#/hr)		0		0		0		0	
Intersection Summary									
Cycle Length: 120									
Actuated Cycle Length: 120									
Offset: 118 (98%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	ed to phas	e 2:NBTL	and 6:SE	3T, Start o	of Green				
Natural Cycle: 90	potenip								
Collinal Type: Actuated-Cool	o i i i								
Splits and Phases: 10: Dor	10: Dorval Road & Wyecroft Road	& Wyear	off Road				Ì		
01 02	Ø2 (R)				€ 03	3		94	
17 s 42 s					21s		4	0 s	
	į				<u> </u>			4	

Without Kerr St Improvements BA Group - EFS

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

→	SBT	1777	0.76	27.2	0.0	27.2	115.7	152.7	672.1		2340	0	0	0	0.76	
۶	SBL	120	0.37	53.6	0.0	53.6	13.8	22.7		125.0	357	0	0	0	0.34	
←	NBT	1739	0.71	17.5	0.0	17.5	111.3	m124.2	494.4		2460	0	0	0	0.71	
•	NBL	125	0.58	30.9	0.0	30.9	11.8	m12.9		65.0	234	0	0	0	0.53	
ţ	WBT	174	0.45	25.7	0.0	25.7	8.3	18.9	199.3		942	0	0	0	0.18	
-	WBL	22	0.09	32.1	0.0	32.1	3.8	9.8		145.0	337	0	0	0	0.07	
†	EBT	190	0.27	18.6	0.0	18.6	7.2	18.8	155.6		902	0	0	0	0.21	
1	EBL	234	09:0	9.99	0.0	9.99	27.0	40.0		115.0	416	0	0	0	0.56	
	Lane Group	Lane Group Flow (vph)	v/c Ratio	Control Delay	Queue Delay	Total Delay	Queue Length 50th (m)	Queue Length 95th (m)	Internal Link Dist (m)	Turn Bay Length (m)	Base Capacity (vph)	Starvation Cap Reductn	Spillback Cap Reductn	Storage Cap Reductn	Reduced v/c Ratio	0

m Volume for 95th percentile queue is metered by upstream signal.

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure

Figure F		•		1	١	ļ	*	1	*	4	ئر		`
EBL EBT EBR WEI WBT WBR NBI NBT NBR SBI SBT ST		\	Ť	>	•		/		-	L		+	*
Year Year <t< th=""><th>Movement</th><th>EBE</th><th>EBT</th><th>EBR</th><th>WBL</th><th>WBT</th><th>WBR</th><th>NBL</th><th>NBT</th><th>NBR</th><th>SBL</th><th>SBT</th><th>SBR</th></t<>	Movement	EBE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
215 70 105 20 65 95 115 1540 60 110 1195 1900	Lane Configurations	F	₩		F	₩		۳	444		F	441	
215 70 105 20 65 95 115 140 66 0110 1195 216 70 100 1900 1900 1900 1900 1900 1900 19	Traffic Volume (vph)	215	20	105	20	65	92	115	1540	09	110	1195	440
100 0.91 0.05 0	Future Volume (vph)	215	100	105	20	900	95	115	1540	1000	110	1195	440
0.97 0.95 1.00 0.95 1.00 0.91 0.97 0.97 0.97 0.99 1.00 0	Total Lost time (s)	200	200	999	200	2 0	999	200	2 0	2006	200	002	300
1.00 0.99 1.00 0.99 1.00 1.00 1.00 1.00	lane Util Factor	26.0	0.95		100	0.95		100	0.91		0.97	0.93	
1,00	Frpb, ped/bikes	1:00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
100 0.91 1.00 0.91 1.00 0.99 1.00 0.96 1.00 0.95 0.92 0	Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
0.95 1.00 0.95 1.00 0.95 1.00 0.95 1.00 0.95 0.00 0.95 0.00 0.05 0.05 0.05 0	Ŧ.	1.00	0.91		1.00	0.91		1.00	0.99		1.00	96.0	
3127 2992 1636 3157 1641 5038 3433 4700 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Fit Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
0.95 1,00 0.63 1,00 0.07 1,00 0.95 1,00 0.95 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (prot)	3127	2992		1636	3157		164	5038		3433	4700	
12.6 24.92 10.89 31.57 12.49 50.38 34.33 47.00 23	Fit Permitted	0.95	1.00		0.63	1.00		0.07	1.00		0.95	1.00	
0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Satd. Flow (perm)	3127	2992		1089	3157		124	2038		3433	4700	
2.4 76 114 22 71 10.3 125 1674 65 12.0 12.9 1.2 1.2 1.0 1.2 1.2 1.0 1.2 1.0 1.2 1.0 1.2 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.95	0.92
234 190 0 22 83 0 125 1736 0 120 1735 2 1 12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 1% 2% 5% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 1% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2% 2%	Adj. Flow (vpn)	457	9 8	4 0	77	_ 5	201	671	10/4	ရှိ	071	6671	8/4
12% 7% 9% 10% 5% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 10% 2% 2% 2% 10% 2% 2% 2% 2% 2% 2% 2%	Lane Group Flow (vph)	234	100	o c	22	83	o c	125	1736	o c	120	17.35	0 0
12% 7% 9% 10% 5% 2% 10% 2% 1% 2% 5% Prof. NA	Confl. Peds. (#/hr)	2	2	· m	, m	3	2 0	-	2	•	i	8	
Prof. NA	Heavy Vehicles (%)	12%	%/	%6	10%	2%	2%	10%	2%	1%	2%	2%	7%
Prot NA pm+pt NA pm+pt NA pm+pt NA Prot 7 4 3 8 5 2 1 8 2 2 2 11.5 5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 5.0 5.0 20.1 0.12 0.2 0.0 0	Bus Blockages (#/hr)	0	2	0	0	0	0	0	က	0	0	0	0
7 4 8 8 5 2 1 115 14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 5.0 7.0 5.0 7.0 5.0 5.0 5.0 10.0 5.0 7.0 5.0 7.0 5	Turn Type	Prot	NA		pm+pt	¥		pm+pt	M		Prot	NA	
149 25.0 7.9 4.0 6.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 50 3.0 5.0 7.0 5.0 7.0 5.0 50 50 5.0 7.0 5.0 7.0 5.0 388 623 180 368 2.11 2.334 3.28 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.0 20.	Protected Phases	7	4		က	∞		2	2		-	9	
14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 14.9 25.0 17.9 14.0 66.9 55.6 11.5 5.0 7.0 5.0 7.0 5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 388 62.3 180 368 2.11 2334 328 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 6.0 0.16 0.12 0.23 0.24 0.37 6.0 0.16 0.10 1.00 1.37 0.68 1.00 7.0 1.00 1.00 1.00 1.37 0.68 1.00 7.0 1.0 1.0 1.0 1.37 0.68 1.00 7.0 1.0 1.0 1.0 1.0 1.0 7.0 1.0 1.0 1.0 1.0 7.1 1.2 1.2 1.2 1.2 7.2 1.2 1.2 1.2 1.2 7.3 1.3 1.3 1.3 1.3 7.4 1.3 1.3 1.3 7.4 1.3 1.3 1.3 7.4 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3 1.3 7.5 1.3 1.3	Permitted Phases				∞			2					
14.9 25.0 17.9 14.0 66.9 55.6 115. 0.12 0.21 0.17.9 14.0 66.9 55.6 115. 0.12 0.21 0.15 0.12 0.56 0.46 0.10 5.0 5.0 5.0 7.0 5.0 7.0 5.0 5.0 180 368 211 2334 328 0.01 0.00 0.003 0.005 0.034 0.03 0.01 0.027 0.03 0.01 0.027 0.05 0.16 0.12 0.23 0.59 0.74 0.03 0.10 0.10 1.00 1.00 1.00 1.00 1.00 0.10 0.10	Actuated Green, G (s)	14.9	25.0		17.9	14.0		6.99	25.6		11.5	25.8	
0.12 0.21 0.15 0.12 0.16 0.46 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.1	Effective Green, g (s)	14.9	25.0		17.9	14.0		6.99	55.6		11.5	22.8	
5.0 7.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	Actuated g/C Ratio	0.12	0.21		0.15	0.12		0.56	0.46		0.10	0.46	
388 623 180 388 211 2334 328 2007 0.03 0.00 0.003 0.006 0.04 0.03 0.006 0.04 0.03 0.006 0.06 0.06 0.06 0.016 0.01 0	Vehicle Extension (s)	5.0	0.7		2.0	0.70		0.0	0.7		0.0	0.7	
c007 0.03 0.00 c0.03 c0.06 0.34 0.03 0.60 0.16 0.01 0.27 0.37 0.37 49.8 38.9 44.0 48.1 0.37 0.64 0.37 49.8 38.9 44.0 48.1 0.37 0.68 1.00 3.9 0.3 0.6 0.7 2.6 0.9 1.4 53.6 39.2 44.7 48.7 29.6 18.7 52.3 D D D D D D D D A7.1 48.3 C B D <td< td=""><td>Lane Gro Cap (vph)</td><td>388</td><td>623</td><td></td><td>180</td><td>368</td><td></td><td>211</td><td>2334</td><td></td><td>328</td><td>2185</td><td></td></td<>	Lane Gro Cap (vph)	388	623		180	368		211	2334		328	2185	
0.60 0.16 0.10 0.27 0.23 0.27 0.37 0.37 0.37 0.37 0.37 0.37 0.37 0.3	v/s Ratio Prot	c0.07	0.03		0.00	c0.03		90.00	0.34		0.03	00.37	
0.60 0.16 0.12 0.23 0.59 0.74 0.37 4.98 38.9 44.0 48.1 19.7 26.4 50.8 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1	v/s Ratio Perm				0.01			0.27					
49.8 38.9 44.0 48.1 19.7 26.4 50.8 10.0 1.00 1.00 1.00 1.00 1.00 1.00 1	v/c Ratio	09:0	0.16		0.12	0.23		0.59	0.74		0.37	0.79	
1.00 1.00 1.00 1.37 0.68 1.00 1.33 0.33 0.3 0.3 0.7 0.68 1.00 1.4 0.3 0.3 0.3 0.4 0.7 0.6 0.9 1.4 0.9 0.3 0.3 0.0 0.7 0.6 0.9 1.4 0.9 0.9 0.9 0.3 0.0 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9 0.9	Uniform Delay, d1	49.8	38.9		44.0	48.1		19.7	26.4		20.8	27.2	
3.9 0.3 0.6 0.7 2.6 0.9 1.4 53.6 39.2 44.7 48.7 2.96 18.7 52.3 D D D D C B D D A D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B D D B B B D D B B B D D B B B D D B B B D D B B B D D B B B D D B B B D D B B B B	Progression Factor	0.0	1.00		1.00	1.00		1.37	0.68		1.00	9: 3	
25.5 39.2 44.7 48.7 29.0 18.7 32.3 19.4 D C B B D C B B D C B B D C B B D C C B B D C C B B D C C B B D C C C C	Incremental Delay, d2	y, 5	0.0		9.0	0.7		5.6	0.0		4.6	. S. C	
28.7 HCM 2000 Level of Service C 2 28.0 Sum of lost time (s) 24.0 T4.2% (CU Level of Service D 15.0 T4.0 T4.2% (CU Level of Service D 15.0 T4.0 T4.0 T4.0 T4.0 T4.0 T4.0 T4.0 T4	Delay (s)	53.6	39.5		- -	48.7		29.6	18./		52.3	30.3	
28.7 HCM 2000 Level of Service C 24.0 sation 74.2% ICU Level of Service D 5.40	Level of Selvice	ב	7 7		ב	700		د	٥		ב	2 6	
28.7 HCM 2000 Level of Service 3 0.66 Sum of lost time (s) 22 2ation 74.2% ICU Level of Service	Approach LOS		- T			0.0 D			9. 4. B) ()	
28.7 HCM 2000 Level of Service 0.66 Sum of lost time (s) 20.0 Sum of lost time (s) 24.2% ICU Level of Service 15	Intersection Summary												
0.66 120.0 Sum of lost time (s) 74.2% ICU Level of Service 15	HCM 2000 Control Delay			28.7	ĭ	3M 2000	Level of S	Service		O			
120.0 Sum of lost time (s) zation 74.2% ICU Level of Service	HCM 2000 Volume to Capac	city ratio		99.0									
Unitzation 74.7% ICU Level of Service 15	Actuated Cycle Length (s)	-		120.0	S S	m of lost	time (s)			24.0			
4	Intersection Capacity Utilizar	IIIOU		14.2%	੨	n Level C	I Service			ם			
	Critical Con Critical			2									

Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total AM (Phase 2) Kerr St Closure 11: Speers Road & Interim Connection

																																								A	
																											SB 2	25	0	72	752	0.07	9:1	10.2	В						
*	SBR	¥C_	20	20		2	0.92	Z									0.00	456			185	6.9		3.3	8	752	SB 1	0	0				0.0	0.0	V	10.2	മ			f Service	
۶	SBL	je-	0	0	Stop	% &	0.92	0									0.94	1456	902	222	886	6.8	2.8	3.5	100	330	WB2	315	0	16	1700	0.19	0.0	0.0						ICU Level of Service	
4	WBR		15	15		c	0.92	92																			WB1	298	0	0	1700	0.35	0.0	0.0		0.0				೦	
ţ	WBT	4₽	825	822	Pree	% &	0.92	897						TWLTL	2	169											EB3	552	0	0	1700	0.32	0.0	0.0					0.3	33.3%	15
†	EBT	#	1015	1015	Pree	% 6	76.0	1103						TWLTL TWLTL	2	99											EB2	552	0	0	1700	0.32	0.0	0.0							
1	EBF	-	0	0		2	0.92	0									0.90	913			069	4.1		2.2	100	826	EB 1	0	0	0	1700	0.00	0.0	0.0		0.0				ou	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade Post Hour Footon	reak nour ractor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF(s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

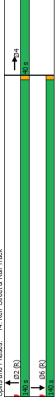
Synchro 11 Report Page 25 Without Kerr St Improvements BA Group - EFS

Timings 14: Kerr Street & Rail Track

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

Lane Group	707	\$	90	
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Turn Type				
Protected Phases	2	4	9	
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	2.0	2.0	5.0	
Minimum Split (s)	22.0	22.0	22.0	
Total Split (s)	140.0	40.0	140.0	
Total Split (%)	78%	25%	78%	
Maximum Green (s)	138.0	38.0	138.0	
Yellow Time (s)	2.0	2.0	2.0	
All-Red Time (s)	0.0	0.0	0.0	
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	
Recall Mode	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	
Intersection Summary				
Cycle Length: 180				
Actuated Cycle Length: 180				
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	o phase 2:∿	IBT and (SBT,	Start of Green
Natural Cycle: 45				
Control Type: Pretimed				
H 10 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0	H		

Splits and Phases: 14: Kerr Street & Rail Track



Without Kerr St Improvements BA Group - EFS

Queues 14: Kerr Street & Rail Track

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) vic Ratio
Control Delay
Queue Delay
Cueue Length 50th (m)
Queue Length 56th (m)
Internal Link Dist (m)
Internal Link Dist (m)
Base Capacity (vph)
Base Capacity (vph)
Slanvalon Cap Reduch
Sloriage Cap Reduch
Sloriage Cap Reduch
Reduced vic Ratio Lane Group Lane Group Flow (vph)

Intersection Summary

Synchro 11 Report Page 27 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total AM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

	4	†	<u> </u>	\	ļ	4	€	—	•	۶	→	*
Movement	田田	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		*						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Fr												
Fit Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	3%	%0
Turn Type												
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)												
Effective Green, g (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		∢			∢			∢			∢	
Intersection Summary												
HCM 2000 Control Delay			0.0	유	M 2000 L	HCM 2000 Level of Service	ervice		∢			
HCM 2000 Volume to Capacity ratio	ratio		0.00									
Actuated Cycle Length (s)			180.0	Sul	Sum of lost time (s)	ime (s)			4.0			
Intersection Capacity Utilization			%0:0	ರ	ICU Level of Service	Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 1: Kerr Street & Wyecroff Road

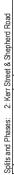
																																								⋖	
																											SB 2	124	0	124	1700	0.07	0.0	0.0							
•	SBR		115	112			0.93	124																			SB 1	0	0	0	1700	0.22	0.0	0.0		0.0				f Service	
→	SBT	₹	0	0	Free	%0	0.93	0						None													NB3	0	0	0	1700	0.19	0.0	0.0						ICU Level of Service	
←	NBT	‡	0	0	Free	%0	0.93	0						None													NB 2	0	0	0	1200	0.19	0.0	0.0						O	
•	NBL	-	0	0			0.93	0										129			129	4.2		2.3	100	1419	NB 1	0	0	0	1700	0.00	0.0	0.0		0.0			1.6	15.7%	15
<i>></i>	EBR	*-	0	0			0.93	0										29			29	7.0		3.3	100	972	EB2	0	0	0	1700	0.23	0.0	0.0	⋖						
1	EBL	<u>_</u>	22	22	Stop	%0	0.93	27	2	3.6	[0						29			29	6.8		3.5	97	932	EB 1	27	27	0	932	0.03	0.7	9.0	⋖	9.0	∢			E	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Sign Control	Grade	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right tum flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

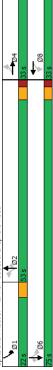
Synchro 11 Report Page 1 Without Kerr St Improvements BA Group - EFS

Timings 2: Kerr Street 8

Future Total PM (Phase 2) Kerr St Closure	Upper Kerr Village (8124-01)
	t & Shepherd Road

	90					9				18.0	28.2	75.0	%69	8.69	3.3	1.9					3.5	3.0	0.0	0.0	Min	10.0	13.0	2					
	Ø4					4				2.0	22.0	33.0	31%	29.0	3.0	1.0					3.0	3.0	0.0	0.0	None	7.0	11.0	0					
	M M					-				7.0	11.0	22.0	20%	18.0	4.0	0.0			Lead	Yes	2.5	3.0	0.0	0.0	None								
•	NBR	*	110	110	Perm		2	2		18.0	28.2	53.0	49.1%	47.8	3.3	1.9	0.0	5.2	Lag	Yes	3.5	3.0	0.0	0.0	Μ	10.0	13.0	2					
/	WBL	*	105	105	Perm		∞	œ						29.0	3.0	1.0	0.0	4.0			3.0	3.0	0.0	0.0	None	7.0	11.0	0					oord
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehide Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 108	Actuated Cycle Length: 39.8	Natural Cycle: 65	Control Type: Semi Act-Uncoord





Without Kerr St Improvements BA Group - EFS

Queues 2: Kerr Street & Shepherd Road	pherd F		Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)
	•	*	
Lane Group	WBL	NBR	
Lane Group Flow (vph)	108	113	
v/c Ratio	0.38	0.08	
Control Delay	17.2	0.1	
Queue Delay	0.0	0.0	
Total Delay	17.2	0.1	
Queue Length 50th (m)	5.5	0.0	
Queue Length 95th (m)	16.0	0.0	
Internal Link Dist (m)			
Turn Bay Length (m)		50.0	
Base Capacity (vph)	086	1533	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.11	0.07	
Intersection Summary			

Synchro 11 Report Page 3 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 2: Kerr Street & Shepherd Road

Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*	2		F	£,		×	*	*-	je.	*	*
Traffic Volume (vph)	0	0	0	105	0	0	0	0	110	0	0	0
Future Volume (vph)	0	0	0	105	0	0	0	0	110	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0					5.2			
Lane Util. Factor				1.00					1.00			
Frpb, ped/bikes				1.00					0.98			
ripb, ped/bikes Frt				1.00					0.85			
Flt Protected				0.95					1.00			
Satd. Flow (prot)				1723					1545			
Flt Permitted				92.0					1.00			
Satd. Flow (perm)				1373					1545			
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	76.0	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	0	0	0	108	0	0	0	0	113	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	46	0	0	0
Lane Group Flow (vph)	0	0	0	108	0	0	0	0	29	0	0	0
Confl. Peds. (#/hr)	2		15	15		2			2	2		
Heavy Vehicles (%)	%	%	%	%	%	% '	%0	% '	5%	%0	% '	% 6
Bus Blockages (#/hr)	0	0	0	0	က	0	0	2	0	0	0	0
Turn Type	Perm			Perm			Perm		Perm	pm+pt		Perm
Protected Phases		4			∞			2	ľ	-	9	
Permitted Phases	4			∞			2		7	ဖ		9
Actuated Green, G (s)				7.2					24.2			
Effective Green, g (s)				7.2					24.2			
Actuated g/C Ratio				0.18					09.0			
Clearance Time (s)				4.0					5.2			
Vehicle Extension (s)				3.0					3.5			
Lane Grp Cap (vph)				243					920			
v/s Ratio Prot												
v/s Ratio Perm				00.08					00.04			
Wc Katlo				0.44					0.0			
Discretion Eath				6.4					0.0			
Incompated Dolay do				2 7					000			
Delay (c)				5 6								
l evel of Service									9			
Approach Delay (s)		0.0			16.2			3.5			0.0	
Approach LOS		⋖			Ф			⋖			⋖	
Intersection Summary												
HCM 2000 Control Delay			9.7	H	3M 2000	HCM 2000 Level of Service	Service		∢			
HCM 2000 Volume to Capacity ratio	city ratio		0.18									
Actuated Cycle Length (s)			40.6	Su	Sum of lost time (s)	time (s)			13.2			
Intersection Capacity Utilization	tion		36.2%	ਠ	ICU Level of Service	f Service			<			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) Timings 3: Kerr Street & Speers Road

Lame Group		^	†	<u> </u>	-	ļ	1	•	—	•	→	*	
8 9	Lane Group	BE	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR	Ø
) 30 670 185 300 1040 120 250 5 235 110 25 30 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Configurations	<u> </u>	‡	*	F	*	*	*	*	*	*	*	
) 30 670 185 300 1040 120 250 5 235 110 25 6 6 6 2 2 2 4 4 8 8 8 6 6 2 2 2 4 4 4 8 8 8 6 6 2 2 2 7 4 4 8 8 8 8 6 6 2 2 2 7 4 4 4 8 8 8 8 6 7 100 30.9 30.9 10.0 30.9 30.9 30.9 30.9 30.9 30.9 30.9 3	Traffic Volume (vph)	9	670	185	300	1040	120	250	Ω.	235	110	25	
pm-bt NA Perm pm-bt NA Perm pm-bt NA Perm NA Perm NA Perm NA Perm Protein Protein Perm Protein Protein Perm Protein Perm Protein Perm Protein Perm Protein Perm Protein Perm Protein Protein Protein Protein Perm Protein Protein Protein Protein Perm Protein Perm Protein Protein Protein Protein Protein Protein Protein Perm Protein Prot	Future Volume (vph)	8	670	182	300	1040	120	250	2	235	110	25	
1 6 6 5 2 7 4 4 8 8 1 1 6 6 5 2 2 7 4 4 8 8 1 1 6 6 5 2 2 7 4 4 8 8 1 1 6 6 5 2 2 7 4 4 8 8 1 1 0 309 309 100 309 309 100 343 343 343 343 1 1 0 309 309 100 309 309 100 343 343 343 343 1 1 0 6 40 540 540 120 540 540 160 380 380 380 380 1 1 0 8 41 481 481 13 1 31 31 31 31 31 31 31 2 0 0 2 2 2 2 0 2 2 2 0 3 3 3 3 3 3 3 3	Turn Type	pm+pt	Ν	Perm	pm+pt	Ϋ́	Perm	pm+pt	Ν	Perm	Ν	Perm	
6 6 5 2 2 7 4 4 8 8 1 6 6 5 2 2 7 4 4 4 8 8 1 2 2 2 2 7 7 4 4 4 8 8 1 2 2 2 2 7 7 7 7 7 7	Protected Phases	~	9		2	2		7	4		∞		.,
1 6 6 5 2 2 7 4 4 8 8 8 7.0 25.0 25.0 7.0 25.0 25.0 7.0 10.0 10.0 10.0 10.0 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 34.3 34.3 11.0 12.0 54.0 54.0 54.0 12.0 54.0 54.0 16.0 38.0 38.0 38.0 18.0 10.0 9.0 48.1 48.1 48.1 13.0 31.7 31.7 31.7 31.7 31.7 11.7 31.7 11.7 1	Permitted Phases	9		9	2		2	4		4		∞	
7.0 25.0 25.0 7.0 25.0 25.0 7.0 10.0 10.0 10.0 10.0 10.0 10.0 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 34.3 34.3 1.0 10.0 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 34.3 34.3 34.3 1.0 3.0 4.0 54.0 54.0 54.0 16.0 38.0 38.0 38.0 38.0 10.0 38.0 45.0 45.0 45.0 45.0 45.0 45.0 45.0 45	Detector Phase	-	9	9	2	2	2	7	4	4	∞	∞	
10.0 55.0 25.0 7.0 25.0 25.0 7.0 10.0 10.0 10.0 10.0 10.0 10.0 10.	Switch Phase												
100 30.9 30.9 10.0 30.9 30.9 10.0 34.3 34.3 34.3 34.3 11.0 12.0 54.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 54.0 15.0 15.0 54	Minimum Initial (s)	7.0	25.0	25.0	7.0	25.0	25.0	7.0	10.0	10.0	10.0	10.0	7.
12.0 54.0 54.0 12.0 54.0 54.0 16.0 38.0 38.0 38.0 18.0 10.0% 45.0%	Minimum Split (s)	10.0	30.9	30.9	10.0	30.9	30.9	10.0	34.3	34.3	34.3	34.3	10.0
100% 450% 450% 100% 450% 133% 317% 317% 317% 317% 317% 317% 317	Total Split (s)	12.0	54.0	54.0	12.0	54.0	54.0	16.0	38.0	38.0	38.0	38.0	16.0
9.0 48.1 48.1 9.0 48.1 13.0 31.7 31.7 31.7 31.7 31.7 31.7 31.7 31.7	Total Split (%)	10.0%	45.0%	45.0%	10.0%	45.0%	45.0%	13.3%	31.7%	31.7%	31.7%	31.7%	13%
30 3.7 3.7 3.0 3.7 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3 3.3	Maximum Green (s)	9.0	48.1	48.1	9.0	48.1	48.1	13.0	31.7	31.7	31.7	31.7	13.0
0.0 2.2 2.2 0.0 2.2 2.2 0.0 3.0 3.0 3.0 3.0 3.0 0.0 0.0 0.0 0.0	Yellow Time (s)	3.0	3.7	3.7	3.0	3.7	3.7	3.0	3.3	3.3	3.3	3.3	3.0
100 000 000 000 000 000 000 000 000 00	All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	0.0	3.0	3.0	3.0	3.0	0.0
Second S	Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Lead Lag Lead Lag Lead Lag Lead Lag	Total Lost Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3	6.3	6.3	
7 Yes	Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lea
s) 2.5 5.5 5.5 2.5 5.5 5.5 4.0 4.0 4.0 4.0 8.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3	Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(a) 20 (b) 20 (c) 20 (c	Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0	4.0	4.0	2.5
(s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
9) 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	a)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	<u>ö</u>
None C-Min C-Min None C-Min None None None None None None None Non	Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0 7.0	Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None	None	None	None	None
14.0 14.0 14.0 14.0 14.0 14.0 14.0 14.0	Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0	7.0	7.0	
I/Ir) 15 15 15 35 35 35 any 35	Flash Dont Walk (s)		14.0	14.0		14.0	14.0		14.0	14.0	14.0	14.0	
Intersection Summary Cycle Length: 120 Actuated Cycle Length: 120 Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated	Pedestrian Calls (#/hr)		15	15		15	15		35	35	35	35	
Cycle Length: 120 Actualed Cycle Length: 120 Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type: Actualed-Coordinated	Intersection Summary												
Actuated Cycle Length: 120 Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycle: 90 Control Type: Actuated-Coordinated	Cycle Length: 120												
Offset 49 (41%), Referenced to phase 2:WBTL and 6:EBTL, Start of Green Natural Cycles and Start and Control Type: Aduated-Coordinated Ontrol Type: Aduated-Coordinated	Actuated Cyde Length: 120												
ate	Offset: 49 (41%), Reference	ed to phase	2:WBTL	and 6:EB	TL, Start	of Green							
윮	Natural Cycle: 90												
	Control Type: Actuated-Coc	ordinated											
		0 400040		7									

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Synchro 11 Report Page 5 Without Kerr St Improvements BA Group - EFS

Queues 3: Kerr Street & Speers Road

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

ane Group ane Group Flow (vph)		†	>	-	ļ	1	•	—	4	→	*
	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
	32	705	195	316	1095	126	263	2	247	116	76
//c Ratio	0.10	0.46	0.24	0.63	0.55	0.14	0.64	0.01	0.41	0.43	0.09
Sontrol Delay	7.0	23.4	7.8	16.4	19.7	3.0	40.3	28.8	5.9	51.0	9.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fotal Delay	7.0	23.4	7.8	16.4	19.7	3.0	40.3	28.8	5.9	51.0	9.0
Queue Length 50th (m)	5.9	58.2	10.3	¥.1	96.4	0.0	47.0	8.0	0.0	24.3	0.0
Queue Length 95th (m)	6.5	98.0	21.5	48.2	114.8	9.5	72.1	3.8	18.0	41.9	0.0
Internal Link Dist (m)		138.4			474.4			103.4		143.2	
Turn Bay Length (m) 10	0.50		75.0	75.0		100.0	20.0		45.0		75.0
Base Capacity (vph)	335	1548	797	204	1973	883	413	228	615	201	456
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.46	0.24	0.63	0.55	0.14	0.64	0.01	0.40	0.23	90.0

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) HCM Signalized Intersection Capacity Analysis 3: Kerr Street & Speers Road

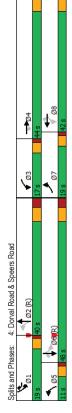
Movement Lane Configurations Traffic Volume (vph) Future Volume (vph) Ideal Flow (vphp) Total Lost time (s) Total Lost time (s) From the Amonth of the Configuration of the Confi	EBL	EBT	FRR	M	WBT	WBR	ION	FON	001	SBL	CDT	SBR
ane Configurations iraffic Volume (vph) uture Volume (vph) deal Flow (vph) oral Lost time (s) ane Util. Factor			5	ייטר			NBL	IQN	NBK		100	
raffic Volume (vph) 'uture Volume (vph) dean Flow (vphpl) ordal Lost time (s) ane Util. Factor rnh ped/pikes	F	*	*	r	*	*	F	*	¥L	r	*	*
iture Volume (vph) deal Flow (vphpl) rotal Lost time (s) ane Util Factor Emb. ned/bikes	8	029	185	300	1040	120	250	. ro	235	0	110	25
deal Flow (vphpl) fotal Lost time (s) ane Util. Factor The ped/likes	30	029	182	300	1040	120	250	2	235	0	110	25
otal Lost time (s) ane Util. Factor The ped/bikes	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
ane Util. Factor	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3		6.3	6.3
-mb ped/bikes	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00		1.00	1.00
المادا المادات	1.00	1.00	0.97	1.00	1.00	0.94	1.00	1.00	0.93		1.00	0.93
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.98	1.00	1.00		1.00	1.00
, T	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00		1.00	1.00
Satd. Flow (prot)	1802	3511	1560	1751	3539	1485	1743	1877	1486		1900	1501
Fit Permitted	0.23	1.00	1.00	0.28	1.00	1.00	0.55	1.00	1.00		1.00	1.00
Satd. Flow (perm)	430	3511	1560	523	3539	1485	1013	1877	1486		1900	1501
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adi. Flow (vph)	32	705	195	316	1095	126	263	2	247	0	116	26
RTOR Reduction (vph)	0	0	109	0	0	22	0	0	175	0	0	22
Lane Group Flow (vph)	35	202	98	316	1095	69	263	S.	72	0	116	4
Confl. Peds. (#/hr)	30		2	2		8	32		35	35		35
Heavy Vehicles (%)	%0	2%	%0	3%	5%	2%	1%	%0	1%	1%	%0	%0
Bus Blockages (#/hr)	0	4	0	0	0	0	0	က	0	0	0	0
	pm+pt	ΑN	Perm	pm+pt	Ä	Perm	pm+pt	ΑA	Perm	pm+pt	≸	Perm
Protected Phases	_	9		2	2		7	4		က	∞	
Permitted Phases	9		9	2		2	4		4	∞		000
Actuated Green, G (s)	57.1	52.9	52.9	72.9	65.7	65.7	34.9	34.9	34.9		16.9	16.9
Effective Green, g (s)	57.1	52.9	52.9	72.9	65.7	65.7	34.9	34.9	34.9		16.9	16.9
Actuated g/C Ratio	0.48	0.44	0.44	0.61	0.55	0.55	0.29	0.29	0.29		0.14	0.14
Clearance Time (s)	3.0	5.9	5.9	3.0	5.9	5.9	3.0	6.3	6.3		6.3	6.3
Vehicle Extension (s)	2.5	5.5	5.5	2.5	5.5	5.5	2.5	4.0	4.0		4.0	4.0
Lane Grp Cap (vph)	252	1547	289	491	1937	813	385	545	432		267	211
v/s Ratio Prot	0.00	0.20		60.00	0.31		c0.09	0.00			90.0	
v/s Ratio Perm	90.0		90.0	c0.30		0.05	c0.11		0.05			0.00
v/c Ratio	0.13	0.46	0.13	0.64	0.57	0.08	0.68	0.01	0.17		0.43	0.02
Uniform Delay, d1	17.0	23.5	19.9	12.9	17.8	12.9	35.6	30.3	31.7		47.2	4.4
Progression Factor	0.62	0.30	2.20	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.2	0.9	0.4	5.6	1.2	0.2	4.5	0.0	0.2		7.	0:0
Delay (s)	10.7	22.2	44.0	15.4	19.0	13.1	40.2	30.3	32.0		48.7	44.4
Level of Service	ω	O	□	В	В	ω	□	O	O		Ω	
Approach Delay (s)		26.3			17.8			36.1			47.9	
Approach LOS		O			ш			Ω			Ω	
ntersection Summary												
HCM 2000 Control Delay			24.7	 	HCM 2000 Level of Service	evel of S	Service		O			
HCM 2000 Volume to Capacity ratio	ratio		0.69									
Actuated Cycle Length (s)			120.0	Su	Sum of lost time (s)	time (s)			18.2			
ntersection Capacity Utilization	_		71.5%	ਠ	CU Level of Service	f Service			ပ			
Analysis Period (min)			15									

Synchro 11 Report Page 7 Without Kerr St Improvements BA Group - EFS

Timing 4: Dorv

sßı	Future Total PM (Phase 2) Kerr St Closure	⊿ (Phase	2) Kerr	St Closure	
orval Road & Speers Road		_	Jpper Kerr Vill	llage (8124-01)	

	1	Ť	<u> </u>	-	ļ	1	•	←	۶	→	*	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations	*	++	×.	F	₩	×.	F	₩.	je-	44	¥c_	
Traffic Volume (vph)	435	200	20	170	695	710	65	999	425	750	330	
Future Volume (vph)	435	200	20	170	695	710	92	999	425	750	330	
Turn Type	Prot	ΑA	Perm	pm+pt	≨	vo+mq	pm+pt	≨	pm+pt	Ν	Perm	
Protected Phases	7	4		က	∞	-	2	2	-	9		
Permitted Phases			4	∞		∞	2		9		9	
Detector Phase	7	4	4	က	∞	~	2	2	~	9	9	
Switch Phase												
Minimum Initial (s)	7.0	10.0	10.0	7.0	10.0	7.0	7.0	20.0	7.0	20.0	20.0	
Minimum Split (s)	11.0	45.0	45.0	11.0	45.0	11.0	11.0	40.0	11.0	40.0	40.0	
Total Split (s)	19.0	44.0	44.0	17.0	45.0	19.0	11.0	40.0	19.0	48.0	48.0	
Total Split (%)	15.8%	36.7%	36.7%	14.2%	35.0%	15.8%	9.5%	33.3%	15.8%	40.0%	40.0%	
Maximum Green (s)	15.0	37.0	37.0	13.0	35.0	15.0	7.0	33.0	15.0	41.0	41.0	
Yellow Time (s)	3.0	4.0	4.0	3.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	
All-Red Time (s)	1.0	3.0	3.0	1.0	3.0	1:0	1.0	3.0	1:0	3.0	3.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0	4.0	7.0	7.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0	3.0	2.0	2.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	None	None	None	None	None	None	C-Min	None	C-Min	C-Min	
Walk Time (s)		7.0	7.0		7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		28.0	28.0		28.0			26.0		26.0	26.0	
Pedestrian Calls (#/hr)		2	2		2			2		2	2	
Intersection Summary												

Intersection comments of the control


Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Kerr St Closure 4: Dorval Road & Speers Road

Upper Kerr Village (8124-01)

424 0.52 3.4 0.0 3.4 12.1 818 0 0 0 0.52 815 0.61 17.5 0.0 17.5 70.6 45.6 494.4 462 1.38 218.2 0.0 218.2 ~127.2 #194.7 1.38 334 799 0.84 50.0 0.0 50.0 91.9 115.6 621.6 0.82 0.26 21.4 0.0 21.4 9.1 0.26 70.0 772 1.04 76.0 0.0 76.0 ~126.6 55.0 1.04 755 0.79 0.0 53.4 90.4 84.3 472.1 WBL 185 0.48 29.1 0.0 29.1 35.1 38.3 85.0 405 54 0.09 0.3 0.0 0.0 60.0 543 0.50 36.2 0.0 36.2 36.2 55.1 71.6 412.3 0.49 1097 473 1.05 105.2 0.0 105.2 ~65.2 #97.8 60.0 452 0 0 0 0 1.05 Queue Delay

Queue Delay

Total Delay

Queue Length 50th (m)

Queue Length 95th (m)

Irun Bay Length (m)

Base Capacity (vph)

Stavation Cap Reducth

Spillack Cap Reducth

Spillack Cap Reducth

Reduced v/c Ratio Lane Group Flow (vph) Control Delay

Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th pricentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Synchro 11 Report Page 9

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 4: Dorval Road & Speers Road

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

	1	†	1	-	↓	4	•	←	•	۶	→	*
Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	‡	¥	<u>r</u>	\$	*-	<i>y</i> -	₩		<u>"</u>	‡	¥.
Traffic Volume (vph)	435	200	20	170	695	710	65	999	20	425	750	390
Future Volume (vph)	435	200	20	170	695	710	65	999	20	425	750	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
lotal Lost unie (s)	0.40	0.7	0.0	0.4	0.7	0.4.0	0.4.0	0.7		0.4.0	0.7	0.7
Frob. ped/bikes	1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00		1.00	1.00	8.0
Flbb. ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
111111111111111111111111111111111111111	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	3433	3560	1556	1786	3546	1581	1805	3523		1787	3574	1599
Flt Permitted	0.95	1.00	1.00	0.38	1.00	1.00	0.29	1.00		0.12	1.00	1.00
Satd. Flow (perm)	3433	3560	1556	718	3546	1581	553	3523		226	3574	1599
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	473	543	24	185	755	772	71	723	92	462	815	424
RTOR Reduction (vph)	0	0	38	0	0	43	0	7	0	0	0	224
Lane Group Flow (vph)	473	543	16	185	755	729	71	792	0	462	815	200
Confl. Peds. (#/hr)	2		2	2		2						
Heavy Vehides (%)	5%	%	5%	%	%	%	%0	%	%	%	%	%
Bus Blockages (#/hr)	0	2	0	0	4	0	0	0	0	0	0	0
Turn Type	Prot	ΑN	Perm	pm+pt	¥	vo+mq	pm+pt	¥		pm+pt	Ϋ́	Perm
Protected Phases	7	4		က	∞	_	2	2		-	9	
Permitted Phases			4	∞		∞	2			9		9
Actuated Green, G (s)	15.8	36.4	36.4	44.4	32.5	20.0	37.9	32.2		53.7	44.0	44.0
Effective Green, g (s)	15.8	36.4	36.4	4.4	32.5	20.0	37.9	32.2		53.7	44.0	44.0
Actuated g/C Ratio	0.13	0.30	0.30	0.37	0.27	0.42	0.32	0.27		0.45	0.37	0.37
Clearance Time (s)	4.0	7.0	7.0	4.0	7.0	4.0	4.0	7.0		4.0	7.0	7.0
Vehide Extension (s)	3.0	2.0	2.0	3.0	2.0	3.0	3.0	2.0		3.0	2.0	5.0
Lane Grp Cap (vph)	452	1079	471	371	096	658	234	942		328	1310	586
v/s Ratio Prot	c0.14	c0.15		0.02	0.21	c0.16	0.01	0.22		00.20	0.23	
v/s Ratio Perm			0.01	0.13		0.30	0.08			00.45		0.12
v/c Ratio	1.05	0.50	0.03	0.50	0.79	- - 5	0.30	0.84		1.41	0.62	0.34
Unitorm Delay, d1	52.1	34.4	29.4	7.92	40.5	32.0	29.4	41.4		34.3	31.2	27.5
Progression Factor	3.5	9.5	00.1	97.1		7.1.7	1.00	00.1		1.20	0.50	0.20
Incremental Delay, oz	0.00	0.0	- 00	0 1.0	0.4.0	107.3	20.7	0.0		0740	0.7	7. 0
level of Service	- LL		. C			<u>5</u>	. C	5.5		о Н	2 a	t d
Approach Delay (s)	-	2.99)	2	75.1	-		48.6		-	75.8	
Approach LOS		ш			ш			۵			ш	
Intersection Summary												
HCM 2000 Control Delay			69 4	Ĭ	M 2000	HCM 2000 Level of Service	Sarvice		ш			
HCM 2000 Volume to Capacity ratio	tv ratio		1.27			5			ı			
Actuated Cycle Length (s)			120.0	S	im of los	Sum of lost time (s)			22.0			
Intersection Capacity Utilization	LC.		92.6%	2	U Level	ICU Level of Service	0		ш			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS

Timings
Future Total PM (Phase 2) Kerr St Closure
5: St. Augustine Drive & Speers Road
Upper Kerr Village (8124-01)

 	SBT	÷\$	0	0	NA	9		9		5.0	24.3	27.0	22.5%	20.7	3.3	3.0	0.0	6.3			3.0	3.0	0.0	0.0	lone	7.0	11.0	0						
٠	SBL	<u>"</u>	22	22	Perm		9	9			24.3					3.0	0.0	6.3			3.0							0				Sreen		
•	NBR	¥.	22	52	Perm		2	7			24.3						0.0				3.0			0.0				0				, Start of (
ļ.	WBT	₹	1295	1295	Ϋ́	∞		œ		2.0	23.9						0.0				3.0	3.0	0.0	0.0	C-Min	7.0	11.0	0				nd 8:WBT		
1	EBT	₩.	855	822	ΑN	4		4		2.0	23.9	93.0	77.5%	87.1	3.7	2.2	0.0	5.9			3.0	3.0	0.0	0.0	S-Min	7.0	11.0	0				4:EBTL a		
1	EBF	<u></u>	115	115	Perm		4	4		2.0	23.9	93.0	77.5%	87.1	3.7	2.2	0.0	5.9			3.0	3.0	0.0	0:0	O-Min	7.0	11.0	0				to phase	hated	Illator
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset 27 (23%), Referenced to phase 4:EBTL and 8:WBT, Start of Green	Natural Cycle: 80	COLLINE Type. nemanes com

Splits and Phases: 5: St. Augustine Drive & Speers Road



Without Kerr St Improvements

BA Group - EFS

Page 11

Queues 5: St. Augustine Drive & Speers Road

Lane Group EBL EBT WBT NBR SBL SBT Lane Group Flow (vph) 120 917 1365 26 57 w Ratio 0.39 0.34 0.09 0.24 0.03 Control Delay 4.1 1.1 6.8 7.8 Queue Delay 0.0 0.0 0.2 0.0 0.0 Queue Length Soft (m) 2.5 9.4 1.7 0.0 0.0 Queue Length Soft (m) 2.5 9.4 1.7 0.0 1.9 4.9 Queue Length Soft (m) 2.5 9.4 1.7 0.0 1.9 4.9 4.9 Queue Length Soft (m) 2.5 9.4 1.7 0.0 1.9 4.9 9.36 Turn Bay Length (m) 30.6 3.08 1.9 4.9 4.9 9.36 Base Capacity (wh) 30.6 3.08 1.9 0 0 0 0 Spillback Cap Reductn 0 0 0 0		^	†	ļ	•	۶	→	
120 917 1365 26 26 26 26 29 29 29 29 29 24 17 65 06 29 20 20 20 20 20 20 20 20 20 20 20 20 20	Lane Group	EBL	EBT	WBT	NBR	SBL	SBT	
0.39 0.30 0.44 0.09 0.24 0.4 0.09 0.24 0.4 0.0 0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Lane Group Flow (vph)	120	917	1365	26	26	57	
4.1 1.1 6.5 0.6 584 0.0 0.0 0.2 0.0 0.2 0.0 0.0 4.1 1.1 6.8 0.6 584 2.5 9.4 117.3 0.0 6.0 m1.7 m3.4 67.7 0.0 14.9 50.0 3081 3092 461 311 0 0 0 819 0	v/c Ratio	0.39	0:30	0.44	0.09	0.24	0.31	
0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Control Delay	4.1	[6.5	9.0	58.4	7.8	
4.1 1.1 6.8 0.6 584 2.5 9.4 1773 0.0 6.0 m1.7 m3.4 67.7 0.0 14.9 50.0 3081 3092 461 311 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Delay	0.0	0.0	0.2	0.0	0.0	0:0	
2.5 9.4 117.3 0.0 6.0 m1.7 m3.4 67.7 0.0 14.9 50.0 3081 3092 461 311 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Total Delay	4.1	1 .	8.9	9.0	58.4	7.8	
m1.7 m3.4 67.7 0.0 14.9 50.0 472.1 49.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.4 9.	Queue Length 50th (m)	2.5	9.4	117.3	0.0	0.9	0:0	
472.1 49.4 50.0 396 3081 3092 461 311 0 0 0 819 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 95th (m)	m1.7	m3.4	2'. 19	0.0	14.9	4.9	
50.0 306 3081 3092 461 311 0 0 819 0 0 0 0 0 0 0 0 0 0 0.39 0.30 0.60 0.06 0.08	Internal Link Dist (m)		472.1	49.4			93.6	
306 3081 3092 461 311 0 0 819 0 0 0 0 0 0 0 0 0 0 0 0 0.39 0.30 0.60 0.06 0.08	Turn Bay Length (m)	20.0						
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)	306	3081	3092	461	311	353	
0 0 0 0 0 0 0 0 0 0 0 0 039 030 090 090	Starvation Cap Reductn	0	0	819	0	0	0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Spillback Cap Reductn	0	0	0	0	0	0	
0.39 0.30 0.60 0.06 0.08	Storage Cap Reductn	0	0	0	0	0	0	
	Reduced v/c Ratio	0.39	0:30	09.0	90.0	0.08	0.16	

Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 5: St. Augustine Drive & Speers Road

EBL EBT EBR WBL WBT WBR NBL NBT NBR NBL NBR NBL NBR NBT NBR NBL NBR NBT NBR NBBR NB		^	Ť	<u> </u>	-	,	/	•	_	•	٠	→	*
115 855 25 0 1295 15 0 0 25 116 855 25 0 1295 15 0 0 25 1100 1900 1900 1900 1900 1900 1900 1100 0.95 0.95 0.95 0.95 1.00 1100 1.00 1.00 1.00 1.00 1.00 1100 1.00 1.00 1.00 1.00 1.00 1100 1.00 1.00 1.00 1.00 1.00 1100 1.00 1.00 1.00 1.00 1.00 120 120 1.00 1.00 1.00 1.00 120 120 1.00 1.00 1.00 1.00 120 120 1.00 1.00 1.00 1.00 120 1.00 1.00 1.00 1.00 1.00 120 1.00 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0.96 0.96 0.96 120 1.00 1.00 1.00 0 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 0 120 1.00 1.00 1.00 120 1.00 1.00 1.00 0 120 1.00 1.00 0 120 1.00 1.00 0 120 1.00 1.00 0 120 1.00 1.00 0.96 0.96 0.96 0.96 120 1.00 1.00 0.96 0.96 0.96 0.96 120 1.00 1.00 0 120 1.00 1.00 0 120 1.00 1.00 0 120 1.00 1.00 0 120 1.00 0.96 0.96 0.96 0.96 0.96 120 1.00 1.00 0 120 1.00 0.96 0.96 0.96 0.96 120 1.00 1.00 0 120 1.00	Movement	EBF	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
115 855 25 0 1295 15 0 0 25 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1.00 0.95 0.95 0.95 0.95 0.96 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 1.00 0.96 1.00 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 1.00 1.00 0.96 0.96 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 0.96 1.00 1.00 1.00 1.00 0.96 1.	Lane Configurations	*	₩			₩				*	r	2	
115 855 25 0 1295 15 0 0 25 1900 1900 1900 1900 1900 1900 1900 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.	Traffic Volume (vph)	115	855	22	0	1295	15	0	0	25	25	0	55
1900 1900 1900 1900 1900 1900 1900 1900	Future Volume (vph)	115	822	52	0	1295	15	0	0	22	22	0	55
5.9 5.9 5.9 6.3 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.801 3562 3567 1644 0.19 1.00 1.00 1.00 1.801 3622 3567 1644 0.19 1.00 1.00 1.00 1.801 362 3567 1644 1.801 3652 3567 1644 1.00 1.00 1.00 1.00 1.801 3.60 366 0.96	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
1.00 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Total Lost time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
1.00	Lane Util. Factor	1.00	0.95			0.95				1.00	1.00	1.00	
1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Frpb, ped/bikes	1.00	1:00			1.00				1.00	1.00	1.00	
1.00 1.00 0.86 0.86 0.86 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.9	Flpb, ped/bikes	1.00	1.00			1.00				1.00	1.00	1.00	
100 100	Fr	1:00	1:00			1.00				98.0	1.00	0.85	
1801 3552 3567 1644	Fit Protected	0.95	1:00			1.00				1.00	0.95	1.00	
0.19 1.00 1.00 1.00 1.00 1.00 1.00 1.00	Satd. Flow (prot)	1801	3552			3567				1644	1805	1615	
355 3552 3567 1644 1 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.96	Fit Permitted	0.19	1:00			1.00				1.00	0.95	1.00	
0.36 0.36 0.36 0.36 0.36 0.36 0.36 0.36	Satd. Flow (perm)	353	3552			3567				1644	1805	1615	
120 891 26 0 1349 16 0 0 26 120 916 0 0 0 0 0 0 25 120 916 0 0 0 0 0 0 0 25 0% 1% 4% 0% 1% 0% 0% 0% 0% 0% 1% 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Peak-hour factor, PHF	96:0	96:0	96.0	96:0	96:0	96:0	96.0	96.0	96.0	96.0	96.0	0.96
120 916 0 0 0 0 0 0 0 25 120 916 0 0 1365 0 0 0 0 1 5 5 5 5 5 6 7 7 8 6 4	Adj. Flow (vph)	120	891	56	0	1349	16	0	0	56	56	0	22
120 916 0 0 1365 0 0 0 1	RTOR Reduction (vph)	0	~	0	0	0	0	0	0	25	0	24	0
5 5 5 5 5 5 5 5 5 5	Lane Group Flow (vph)	120	916	0	0	1365	0	0	0	-	26	က	0
0% 1% 4% 0% 1% 0% 0% 0% Perm A 8 Perm F 4 4 8 2 1016 1016 1016 6.2 1016 1016 1016 6.2 1016 1016 1016 6.2 1016 1016 1016 6.2 5.9 5.9 5.9 5.9 6.3 2.9 5.9 5.9 5.9 6.3 3.0 2.9 5.9 5.9 5.9 5.9 6.3 3.0 2.9 5.9 5.9 5.9 5.9 6.3 6.3 6.3 2.9 5.9 5.9 5.9 5.9 6.3 6.3 6.3 6.3 0.34 0.30 0.45 0.4 0.1 1.0 0.1 1.7 0.1 0.4 A A A A A A A	Confl. Peds. (#/hr)	2		2	2		2						
Perm NA NA Perm Ferm Fer	Heavy Vehicles (%)	%0	1%	4%	%0	1%	%0	%0	%0	%0	%0	%0	%0
4 8 8 2	Turn Type	Perm	Ν			AN				Perm	Perm	¥	
1016 101.6 101.6 6.2 1016 101.6 101.6 6.2 10.85 0.85 0.85 0.85 0.05 5.9 5.9 5.9 5.9 5.9 6.3 3.0 0.2 0.3 0.00 0.34 0.30 0.45 0.00 0.40 0.30 0.45 0.00 0.86 0.50 2.38 0.00 0.86 0.50 2.38 0.00 1.7 0.1 0.4 0.4 0.1 3.6 1.1 6.3 54.1 A A A A A A A A A A B B Isy 6.4 HCM/2000 Level of Service A Capacity ratio 0.40 0.40 10.0 0.40 0.40 0.40 0.40 10.0 0.40 0.40 0.40 0.40 10.0 0.40 0.40 0.40 0.40 0.40 10.0 0.40 0.40 0.40 0.40 0.40 10.0 0.40 0.40 0.40 0.40 0.40 0.40 0.40	Protected Phases		4			∞						9	
1016 1016 1016 1016 62 1016 1016 10116 1016 62 1016 01016 10116 62 1018 0108 0109 1018 0101	Permitted Phases	4								2	9		
s) 1016 1016 1016 62 0.85 0.85 0.85 0.05 5.9 5.9 5.9 5.9 5.9 6.3 3.0 3.0 3.0 3.0 3.0 3.0 1.0 298 3007 0.038 84 0.04 0.03 0.045 0.000 c 0.40 0.30 0.45 0.000 c 0.40 0.50 2.58 0.00 d2 1.7 0.1 0.4 6.3 54.1 A A A A A A A A A A A A A A A A A A A	Actuated Green, G (s)	101.6	101.6			101.6				6.2	6.2	6.2	
0.85 0.85 0.85 0.05 5.9 5.9 5.9 5.9 0.05 5.9 5.9 5.9 5.9 0.05 5.9 5.9 5.9 5.9 0.05 5.9 5.9 5.9 5.9 0.05 5.0 3.0 3.0 3.0 3.0 0.26 0.038 0.000 0.000 0.40 0.30 0.30 0.45 0.000 0.40 0.30 0.30 0.45 0.000 0.2 1.7 0.1 0.4 0.4 0.1 0.4 A A A A A A A A A A A A A A A A A A A	Effective Green, g (s)	101.6	101.6			101.6				6.2	6.2	6.2	
Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign Sign	Actuated g/C Ratio	0.85	0.85			0.85				0.05	0.05	0.05	
S S S S S S S S S	Clearance Time (s)	5.9	5.9			5.9				6.3	6.3	6.3	
298 3007 3020 84 0.26 c.0.38 0.34 c.0.38 0.40 0.30 c.0.45 0.40 0.30 0.45 0.40 0.50 2.58 0.00 0.40 2.1 1.9 2.58 0.00 0.2 6 1.1 0.1 0.4 0.4 A A A A A A A A A A A A A A A A A A A	Vehicle Extension (s)	3.0	3.0			3.0				3.0	3.0	3.0	
0.34 0.26 c.0.38 0.00 of 0.00 of 0.00 0.00 0.00 0.00 0.0	Lane Grp Cap (vph)	298	3007			3020				84	93	83	
0.34 0.00 of 0	v/s Ratio Prot		0.26			c0.38						0.00	
0.40 0.30 0.45 0.02 0.02 0.02 0.02 0.03 0.05 0.05 0.05 0.05 0.05 0.05 0.05	v/s Ratio Perm	0.34								0.00	c0.01		
2.1 1.9 2.3 54.0 54.0 50 5.6 0.50 2.58 1.00 0.10 0.1 5.8 1.00 0.1 5.8	v/c Ratio	0.40	0.30			0.45				0.02	0.28	0.04	
0.86 0.50 2.58 1.00 . 0.1 0.4 0.11 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.	Uniform Delay, d1	2.1	1.9			2.3				54.0	54.8	4.7	
d2 1.7 0.1 0.4 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1 0.1	Progression Factor	0.86	0.50			2.58				1.00	1.00	1.00	
3.6 1.1 6.3 54.1 A A A A A B B B B4.1 1.4 6.3 54.1 A A Delay Delay 6.4 HCM 2000 Level of Service A roth key at 10.0 On A Sum of lock time (s) 12.2	Incremental Delay, d2	1.7	0.1			0.4				0.1	1.6	0.2	
A A A A A A A A A A A B A B A B B A B B A B B B A B	Delay (s)	3.6	[-			6.3				<u>4</u>	56.4	54.2	
any A	Level of Service	V	⋖			∢				Δ	ш	۵	
A A A A B D	Approach Delay (s)		1.4			6.3			54.1			54.9	
lay 6.4 HCM 2000 Level of Service 0.44 (2000 Level of Service 0.44 (2000 Level of Service 1.20 (2000 Level of Serv	Approach LOS		4			∢			٥				
lay 6.4 HCM 2000 Level of Service Capacity ratio 0.44 (2000 Level of Service 1.20 (200	Intersection Summary												
0.44 120 0 Sum of lost time (s)	HCM 2000 Control Delay			6.4	Ĭ	3M 2000	Level of S	Service		⋖			
120 O Sum of lost time (s)	HCM 2000 Volume to Capac	ity ratio		0.44									
20.00 (0) (0) (0) (0) (0)	Actuated Cycle Length (s)	,		120.0	જ	m of lost	time (s)			12.2			
zation 61.9% ICU Level of Service	Intersection Capacity Utilizati	uo		61.9%	೦	U Level o	f Service			Ф			
7,	Analysis Period (min)			15									

Without Kerr St Improvements BA Group - EFS

Synchro 11 Report Page 13

Timings
6: Speers Road/Cornwall Road & Cross Avenue
Upper Kerr St Closure
Upper Kerr Village (8124-01)

0000	<u>-</u>	FGL	TO/W	000	000	
Lane Group	EBL	EBI	WBI	SBL	NDV NDV	
Lane Configurations	<i>y</i> -	‡	+	<i>y</i> -	R.	
Traffic Volume (vph)	195	620	1165	10	325	
Future Volume (vph)	195	620	1165	10	325	
Turn Type	pm+pt	Ϋ́	Ϋ́	Prot	Perm	
Protected Phases	2	2	9	4		
Permitted Phases	2				4	
Detector Phase	2	2	9	4	4	
Switch Phase						
Minimum Initial (s)	0.9	38.0	38.0	10.0	10.0	
Minimum Split (s)	12.0	47.6	47.6	15.8	15.8	
Total Split (s)	17.0	102.0	85.0	38.0	38.0	
Total Split (%)	12.1%	72.9%	%2.09	27.1%	27.1%	
Maximum Green (s)	11.0	95.4	78.4	32.2	32.2	
Yellow Time (s)	4.0	3.7	3.7	3.3	3.3	
All-Red Time (s)	2.0	5.9	5.9	2.5	2.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	0.9	9.9	9.9	5.8	5.8	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Vehide Extension (s)	3.5	2.0	2.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	0.0	0.0	
Recall Mode	None	C-Min	C-Min	None	None	
Walk Time (s)		10.0	10.0			
Flash Dont Walk (s)		31.0	31.0			
Pedestrian Calls (#/hr)		2	2			
Intersection Summary						
Cycle Length: 140						
Actuated Cycle Length: 140						
Offset: 13 (9%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	to phase 2	EBTL an	d 6:WBT,	Start of	Green	
Natural Cycle: 80						
Control Type: Actuated-Coordinated	dinated					

Splits and Phases: 6: Speers Road/Cornwall Road & Cross Avenue



Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) Queues 6: Speers Road/Cornwall Road & Cross Avenue

						, ,
	4	†	ţ	٠	*	
Lane Group	EBL	EBT	WBT	SBL	SBR	
Lane Group Flow (vph)	203	646	1230	9	339	
v/c Ratio	0.55	0.21	0.48	0.07	0.67	
Control Delay	7.8	2.5	9.4	2.09	14.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	7.8	2.5	9.4	2.09	14.3	
Queue Length 50th (m)	7.7	14.3	99.1	2.7	6.1	
Queue Length 95th (m)	14.0	21.3	6.66	8.3	17.8	
Internal Link Dist (m)		474.4	77.5	0.09		
Turn Bay Length (m)	80.0			45.0		
Base Capacity (vph)	389	3016	2569	415	879	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.52	0.21	0.48	0.02	0.39	
Intersection Summary						

Synchro 11 Report Page 15 Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 6: Speers Road/Cornwall Road & Cross Avenue

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

Lane Configurations								
figurations (phi) 195 620 1165 15 10 325 (phi) 196 620 1165 15 10 325 (phi) 196 620 1165 15 10 325 (phi) 1900 1900 1900 1900 1900 1900 1900 190	Movement	EBL	EBT	WBT	WBR	SBL	SBR	
lume (rph) 195 620 1165 15 10 325 10 10 10 10 10 10 10 10 10 10 10 10 10	Lane Configurations	<i>y</i> -	₩	4₽		۳	N. M.	
lume (vph) 195 620 1165 15 10 325 1	Traffic Volume (vph)	195	620	1165	15	10	325	
Factor 1900	Future Volume (vph)	195	620	1165	15	10	325	
Figure (s) 6.0 6.6 6.6 5.8 5.8 5.8 Feature (s) 6.0 6.6 6.6 5.9 1.00 0.88 Feature (s) 6.0 6.0 6.0 1.00 1.00 0.88 1.00 1.00 1.00 1.00 0.85 1.00 1.00 1.00 0.95 1.00 0.85 1.00 0.95	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Factor 1.00 0.95 0.95 1.00 0.88 1.00 0.88 1.00 1.00 1.00 1.00	Total Lost time (s)	0.9	9.9	9.9		2.8	2.8	
Decision Control Con	Lane Util. Factor	1:00	0.95	0.95		1.00	0.88	
ted 0.95 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
ted (100 100 1100 100 0.85 w (pox) 1703 3610 3656 100 0.85 ted (100 100 100 100 0.95 100 ted (100 100 100 100 0.95 100 ted (100 100 100 0.95 100 1703 3610 3656 1805 2733 ted (100 0.96 100 0.95 100 327 3610 3666 196 0.96 0.96 0.96 ted (100 0.96 100 0.95 ted (100 0.96 100 0.96 ted (100 0.96 ted (Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00	
ried (1045) 1.00 0.95 1.00 (1046) 1.00 (1047) 1.00 0.95 1.00 (1047) 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 0.95 1.00 1.00 1.80 0.96 0.96 0.96 0.96 0.96 0.96 0.96 0.9	Fr	1.00	1.00	1.00		1.00	0.85	
March 1703 3610 3566 1805 2733	Fit Protected	0.95	1.00	1.00		0.95	1.00	
ted (178) 100 100 0.95 100 (178) 100	Satd. Flow (prot)	1703	3610	3566		1805	2733	
(perm) 327 3610 3566 1805 2733 (rathor, PHF 0.96 0.96 0.96 0.96 0.96 0.96 (rathor) (vph) 203 646 123 0 0 0 303 duction (vph) 203 646 1230 0 10 38 sta (H1n) 5 0 1 0 303 sta (H1n) 5 0% 1% 0% 4% Phases 5 6 6 6 6 6 6 Green, G(s) 117.0 117.0 100.9 10.6 10.6 10.6 Green, G(s) 117.0 117.0 100.9 10.6 10.6 10.6 Green, G(s) 117.0 117.0	Flt Permitted	0.18	1.00	1.00		0.95	1.00	
r factor, PHF 0.96 0.96 0.96 0.96 0.96 0.90 0.00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	Satd. Flow (perm)	327	3610	3566		1805	2733	
(vph) 203 646 1214 16 10 339 dudition (vph) 203 646 1214 16 10 339 bicles (%) 6% 0% 1% 0% 4% bicles (%) 6% 0% 0% 4 4 bicles (%) 1170 100.9 106 106 106 Green, G (%)	Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	
duction (vph) 0 0 0 0 311 duction (vph) 203 646 1230 0 10 38 1st (#thr) 5 5 5 6 10 38 hides (%) 6% 0% 1% 0% 0% 4% hides (%) 6% 0% 1% 0% 0% 1% hides (%) 6% 0% 1% 0% 100 100 100 100 100 100 100 1	Adj. Flow (vph)	203	646	1214	16	10	339	
up Flow (vph) 203 646 1230 0 10 38 sts. (#In/n) 5 6 0% 1% 6 4 % a pmr+pt NA NA Prot Perm Phases 5 2 6 4 A Phases 5 2 6 4 A Phases 5 2 6 6 6 6 6 Green, G(s) 117.0 100.9 10.6 10.6 10.6 10.6 Green, G(s) 117.0 117.0 100.9 10.6 10.6 10.6 Green, G(s) 117.0 117.0 100.9 10.6 10.6 10.6 Green, G(s) 117.0 117.0 100.9 10.6 10.6 10.6 Green, G(s) 31.2 301.6 257.0 3.0 3.0 3.0 Cap (vpt) 31.2 301.6 257.0 3.0 3.0 4.0 1.0 <td>RTOR Reduction (vph)</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>301</td> <td></td>	RTOR Reduction (vph)	0	0	0	0	0	301	
State Stat	Lane Group Flow (vph)	203	646	1230	0	10	38	
hides (%) 6% 0% 1% 0% 4% by section (%) 6% 0% 1% 0% 4% Dhases 2 6 4 4 Phases 2 6 4 4 Phases 2 6 4 4 Phases 2 6 4 4 Creen, G (s) 117.0 100.9 10.6 10.6 Green, G (s) 117.0 117.0 100.9 10.6 10.6 Green, G (s) 117.0 117.0 100.9 10.6 10.6 Stension (s) 5.0 5.0 5.0 3.0 3.0 Atension (s) 3.5 5.0 5.0 3.0 3.0 Atension (s) 3.5 5.0 5.0 3.0 3.0 Creat (vph) 372 3016 2570 136 206 Port co.04 0.18 0.34 0.01 Perm co.42 18 0.34 0.01 Perm co.42 2.3 8.3 6.01 6.06 Ord (sold) 1.00 1.00 1.00 1.00 Factor 1.00 1.00 1.00 1.00 Creat (vph) 3.6 9.0 6.1.1 Exercise A A A E E E Delay (s) 3.6 9.0 6.1.1 LOS A A A E E Delay (s) 3.6 9.0 6.1.1 Control Delay Cycle Length (s) 2.0 3.0 0.03 A A B E Control Delay Cycle Length (s) 2.0 3.0 0.03 An A B E Control Capacity ratio 0.33 Cycle Length (s) 2.0 3.0 0.03 A A B E Control Capacity ratio 0.35 Cycle Length (s) 2.0 0.00 Cycle Length (s) 2.0 0.00 An A B E E Control Capacity ratio 0.053 Cycle Length (s) 2.0 0.00 An A B E E E Control Capacity ratio 0.053 A A B E E Control Capacity ratio 0.053 Cycle Length (s) 2.00 An A B E E E Control Capacity ratio 0.053 Cycle Length (s) 2.00 An A B E E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E Control Capacity ratio 0.053 An A B E E E Control Capacity ratio 0.053 An A B E E E Control Capacity ratio 0.053 An A B E E E Control Capacity ratio 0.054 An A B E E E E Control Capacity ratio 0.054 An A B E E E E E Control Capacity ratio 0.056 An A B B E E E	Confl. Peds. (#/hr)	2			2			
Phases pm+pt NA NA Prot Perm Final Phases 5 2 6 4 Phases 2 6 Green, G(s) 117.0 100.9 10.6 10.6 Green, G(s) 117.0 100.9 10.0 Green, G(s) 117.0 100.0 Green, G(s) 117.0 100.0 Green, G(s) 117.0 100.0 Green, G	Heavy Vehicles (%)	%9	%0	1%	%0	%0	4%	
Phases 5 2 6 4 Phases 2 2 17.0 100.9 10.6 10.6 Green, G(s) 117.0 117.0 100.9 10.8 10.8 Final (s) 6.6 6.6 6.6 5.8 5.8 5.8 Final (s) 6.6 6.6 6.6 5.8 5.8 5.8 Final (s) 372 3016 2570 136 206 Frot (vph) 372 3016 2570 10.0 Frot (c) 4 0.18 0.34 0.01 Fort (c) 4 0.18 0.34 0.01 Fort (c) 4 2.3 8.3 60.1 60.6 Fort (c) 5 0.2 0.4 61.1 Fervice A A E E E Delay, G(s) 100 1.00 1.00 1.00 Fort (c) 5 0.2 0.4 61.1 Fervice A A A E E Delay (s) 8 9.0 61.1 Fort (c) 6 0.2 0.4 Fort (c) 6 0.2 Fort (c	Turn Type	pm+pt	AN	AN		Prot	Perm	
Phases 2 4 4 Phases 2 17.0 100.9 10.6 10.6 Green, (s) 117.0 110.9 10.6 10.6 Green, (s) 117.0 117.0 117.0 10.8 10.8 Adension (s) 3.5 5.0 5.0 3.0 3.0 Adension (s) 3.5 5.0 5.0 3.0 3.0 Adension (s) 3.5 5.0 5.0 1.0 Frot Port Col. 4 0.18 0.34 0.01 0.01 Frot Col. 4 0.18 0.34 0.07 0.18 Frot Col. 4 0.19 0.10 0.10 0.10 0.10 Frot Col. 4 0.10 0.10 0.10 0.10 Frot Col. 4 0.10 0.10 0.10 0.10 Frot Col. 4 0.10 Frot	Protected Phases	2	7	9		4		
Green, G(s) 1170 1170 100.9 10.6 10.6 10.6 3.6 3.6 3.6 10.6 10.6 10.6 10.6 10.6 10.6 10.6 10	Permitted Phases	2					4	
Care	Actuated Green, G (s)	117.0	117.0	100.9		9.01	10.6	
g/C Ratio 0.84 0.84 0.72 0.08 0.08 0.8 s limits (s) 6.0 6.6 6.6 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8 5.8	Effective Green, g (s)	117.0	117.0	100.9		10.6	10.6	
Time (s) 6.0 6.6 6.6 5.8 5.8 4 5.8 4 4 5.0 5.0 5.0 5.0 3.0 3.0 3.0 4 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Actuated g/C Ratio	0.84	0.84	0.72		0.08	0.08	
Adension (s) 3.5 5.0 5.0 3.0 3.0 Cap (vph) 372 3016 2570 136 206 Perm c.0.04 0.18 0.34 0.01 0.001 Perm c.0.42 0.48 0.07 0.18 Abley, d1 5.4 2.3 8.3 60.1 6.06 Abley, d2 1.00 1.00 1.00 1.00 1.00 Abley, d2 1.8 0.2 0.6 0.2 0.4 61.1 Belay, d2 1.8 0.2 0.6 0.2 0.4 61.1 Los 7.2 2.5 9.0 61.1 E E Delay (s) 3.6 9.0 61.1 E E And Candrol Delay 4.6 HCM 2000 Level of Service Control Delay 140.0 Sum of lost time (s) And Capacity ratio 0.53 Control Capacity ratio 0.53 Control Capacity ratio 0.6 0.0 0.0 0.0 0.0	Clearance Time (s)	0.9	9.9	9.9		2.8	5.8	
Cap (vph) 372 3016 2570 136 206 Proft c0.04 0.18 0.34 0.01 Perm c0.04 0.18 0.07 0.18 Nelay, d1 5.4 2.3 8.3 60.1 60.6 no Factor 1.00 1.00 1.00 1.00 1.00 no Factor 1.8 2.5 9.0 60.4 61.1 service A A A E E Delay, (s) 3.6 9.0 61.1 E E Loss A A A E E E Delay, (s) 3.6 9.0 61.1 A A A A A A A A A A A A A B <td>Vehicle Extension (s)</td> <td>3.5</td> <td>2.0</td> <td>2.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td></td>	Vehicle Extension (s)	3.5	2.0	2.0		3.0	3.0	
Prot c0.04 0.18 0.34 0.01 Perm c0.04 0.18 0.34 0.01 0.42 0.042 0.001 0.55 0.21 0.48 0.07 0.18 0.55 0.21 0.48 0.07 0.18 0.55 0.21 0.48 0.07 0.18 0.100 1.00 1.00 1.00 1.00 0.2 0.6 0.2 0.4 0.2 0.5 0.6 0.4 6.11 0.2 0.5 0.6 0.1 6.06 0.2 0.6 0.1 6.06 0.2 0.6 0.1 0.0 0.2 0.1 0.0 0.2 0.1 0	Lane Grp Cap (vph)	372	3016	2570		136	206	
Perm C0.42 c0.01 Aleay, d1 5.4 2.3 8.3 60.1 60.6 Aleay, d2 2.3 8.3 60.1 60.6 60.6 Aleav, d2 1.00 1.00 1.00 1.00 1.00 Islandely, d2 1.8 0.2 0.6 0.2 0.4 Bolay, d2 1.8 0.2 0.6 0.1 0.6 Loss A A A A A A Delay (s) 3.6 9.0 61.1 B A A And Candroll Delay 4.6 HCM 2000 Level of Service A A A A Ovalid Length (s) 1.40.0 Sum of lost time (s) A A A A A A A A A A B B A A B B B A B B B B B B B B B B B B<	v/s Ratio Prot	c0.04	0.18	0.34		0.01		
0.55 0.21 0.48 0.07 0.18	v/s Ratio Perm	c0.42					c0.01	
belay, d1 5.4 2.3 8.3 60.1 60.6 on Factor 1.00 1.00 1.00 1.00 1.00 fall Delay, d2 18 0.2 0.6 0.2 0.4 Favies A A A E E E Delay(s) 3.6 9.0 61.1 LOS Summary 1.46 HCM 2000 Level of Service O'Volume to Capacity ratio O'Control Delay 1.40 Sum of lost time (s) A A A E E O'Control Delay 1.40 Sum of lost time (s) A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E E A A A E B A A A E B A A A E B A A A E B A A A E B A A A E B A A A E B A A A E B A A A E B A A A E B A A A E B A A A B B B A A A B B B B A A A B B B B B B B B B B B B B	v/c Ratio	0.55	0.21	0.48		0.07	0.18	
on Factor 1.00 1.00 1.00 1.00 Isla Delay, d2 1.8 0.2 0.6 0.2 0.4 7 2 2.5 9.0 6.0.4 6.11 Los Delay (s) 3.6 9.0 61.1 Los Manuary O Control Delay 1.6 HCM 2000 Level of Service O Volume to Capacity ratio 0.53 Oycle Length (s) 140.0 Sum of lost time (s) 2000 A Miles of Mi	Uniform Delay, d1	5.4	2.3	8.3		60.1	9.09	
Ital Delay, d2	Progression Factor	1:00	1.00	1:00		1.00	1.00	
72 2.5 9.0 60.4 61.1	Incremental Delay, d2	7.8	0.2	9.0		0.2	0.4	
3.6 9.0 61.1 A A E E E A A B E 14.6 HCM 2000 Level of Service 0.53 Sum of lost time (s) 68.6% ICU Level of Service	Delay (s)	7.2	2.5	9.0		60.4	61.1	
3.6 9.0 61.1 A A E 14.6 HCM 2000 Level of Service 0.53 Sum of lost time (s) 68.6% ICU Level of Service 1.5	Level of Service	A	V	V		ш	ш	
14.6 HCM 2000 Level of Service 0.53 140.0 Sum of lost time (s) 68.6% ICU Level of Service 1.5	Approach Delay (s)		3.6	9.0		61.1		
14.6 HCM 2000 Level of Service 0.53 140.0 Sum of lost time (s) 68.6% ICU Level of Service	Approach LOS		∢	∢		ш		
14.6 HCM 2000 Level of Service 0.53 140.0 Sum of lost time (s) 68.6% ICU Level of Service	Intersection Summary							
0.53 140.0 Sum of lost time (s) 68.6% ICU Level of Service	HCM 2000 Control Delay			14.6) 무	3M 2000 I	evel of Service	В
140.0 Sum of lost time (s) 68.6% ICU Level of Service	HCM 2000 Volume to Capac	city ratio		0.53				
68.6% ICU Level of Service	Actuated Cycle Length (s)			140.0	S	ım of lost	time (s)	18.4
77	Intersection Capacity Utiliza	tion		%9.89	0	U Level o	Service	O
	Applying Dariod (min)			7.7				

Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 7: Kerr Street & Prince Charles Drive

(h) 10 10 10 11 11 11 11 11 11 11 11 11 11	44 10 10 10 10 10 10 10 10 10 10 10 10 10	MBL 10 10 10 10 10 10 10 10 10 11 1196	WBT 0 0 0 0 0 0 0 0 0 3 0 3 1.1 1.1 3 1.1 1.1 1.1 1.1 1.	30 30 32 32 536 536	0.95 6.35 6.35 6.35	A70 470 470 670 0% 0.95 495 195 238	0.95 11 10 11	20 20 20 21 21 21 536 536	SBT 560 560 560 560 670 670 670 670 670 670 670 670 670 6	25 25 25 25 26 26 26 26 26 26 26 26 26 26 26 26 26
0.96 11 12.12 10.77 10.77 7.1 83 93 93 150 160 111 111 111	0 0 4	0 5 6	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	30 32 32 536 536	0.95 5 5 6.35 6.35	470 470 470 6% 0.95 495 238	10 0.95	20 20 21 21 0.95 536	560 560 Free 0% 0.95 589 589 5 3 1.1 0 None	0.95 25 26 26 26 27 28
0.96 0.87 1212 1212 7.1 7.1 7.1 7.1 7.1 7.1 150 EB 1 111 111 111	0 0 0	0, 7	0 Stop 0% 0 0% 0 0.95 0 0.95 1.1 3.6 1.218	30 30 30 30 30 536 536	0.0 0.85 5.55 5.55 5.55 5.55 5.55 5.55 5	470 470 470 0.95 495 None 238	10 0.95	20 20 21 21 0.95 536	560 560 560 0% 0.95 589 589 589 0 11.1 0	25 25 26 26 26
0.96 0.96 11 1212 1212 7.1 7.1 7.1 7.1 150 EB 1 11 11 11 11 11	6 6 4	0, 1	Stop 0.0% 0.095 0.095 0.30 3.0 1.1 1.1 3.1 1.1 1.1 1.1	30 0.96 5.36 5.36	0.95	A70 Free 0% 0.95 495 A95 238	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	20 0.95 21 21 236 536	560 Free 0% 0.95 589 5 3.6 1.1 0 None	26 26 26
0.95 11 1212 1212 7.1 7.1 7.1 7.1 8.5 93 150 EB 1 \ EB 1 \ EB 1 \ 11 11			Stop 0,% 0.95 0.95 0.95 0.95 0.95 0.87 12.18	0.96 0.96 5.36	0.95	None 238	0.95	21 21 0.96 536	Free 0% 0.95 589 589 3.6 1.1 0 None 127	0.95
0.95 11 1212 1077 7.1 7.1 7.1 8.9 150 181 11 11 11 11 11 12 22 23 11			0.95 0.95 0 3.6 11.1 3 1.2 18 12.18	0.95 32 536 536	0.95 5 0.85 635	0.95 0.95 None 238	11	21 21 0.96 536	0.95 589 589 1.1 0 None	0.95
0.95 0 11 1212 11 1077 11 7.1 17 150 93 11 150 11 111 111			0.95 0 3.6 1.1 3.6 1.218	0.95 32 536 536	0.95 5 6.35 6.35	0.95 495 None 238	11 11	21 21 0.96 536	0.95 589 5.5 3.6 1.1 0 None	0.95
0.87 0 12.12 1: 7.1 17 7.1 150 83 93 150 150 7 11			3.6 3.6 1.1 3.6 0.87 12.18	32 0.96 536	0.85	None 238	=	21 0.96 536	589 3.6 1.1 0 0 127	26
0.87 0 1212 1: 1077 11 7.1 7.1 3.5 93 150 150 11 11 11			30 3.6 1.1 3 0.87 12.18	0.96	0.85	None 238		0.96	3.6 1.1 None 127	
0.87 0 1212 11 1077 11 7.1 7.1 7.1 150 150 150 150 111 111 111 111 111 11			3.6 1.1 3 0.87 1218	0.96 536	0.85	None 238		0.96	3.6 1.1 None 127	
0.87 1212 1077 7.1 7.1 7.1 8.9 93 150 EB1 \text{V}			0.87	0.96 536	0.85	None 238		0.96	1.1 None 127	
0.87 1212 1077 7.1 3.5 93 150 EB 1 \ EB 1 \ 11			0.87	0.96	0.85	None 238		0.96	0 None 127	
0.87 1212 1077 7.1 7.1 7.1 83.5 93 150 150 11 11 11			0.87	0.96	0.85	None 238		0.96	None 127	
0.87 1212 1077 7.1 7.1 8.5 93 93 150 EB1 V			0.87	0.96	0.85	None 238		0.96	None 127	
0.87 1212 1077 7.1 7.1 7.1 150 EB 1 V			1218	0.96	0.85	238		0.96	127	
0.87 1212 1077 7.1 7.1 3.5 93 150 EB 1 \ 12 22 22 11 11			1218	536	0.85	238		0.96	127	
0.87 1212 1077 7.1 7.1 8.3 9.3 150 150 111 111 111			0.87	0.96	0.85			0.96		
1212 1077 7.1 7.1 150 181 V 111 111 111			1218	236	635			536		
1077 7.1 7.1 3.5 93 150 EB1 \ 22 21 11 11										
1077 7.1 7.1 3.5 93 150 150 11 11										
10/7 7.1 3.5 93 150 150 12 11 11 11	•			000				0		
7.1 3.5 93 150 150 111 111 111 111 111			1084	200	486			200		
3.5 93.5 150 122 22 11 11		7.1	6.5	6.2	4.3			4.1		
3.5 93 150 150 22 11 11										
150 150 22 22 23 11 11 11 11 11 11 11 11 11 11 11 11 11	.,		4.0	3.3	2.4			2.2		
150 EB 1 V 22 11 11		33	100	8	66			86		
tion, Lane # EB 1 v 22 22 11 11 11 11 11 11 11 11 11 11 11	46 500		177	537	829			984		
ne Total 22 ne Left 11 ne Right 11	B1 NB1	1 SB 1								
me Right 11	43 511	9								
me Right 11	11 5	5 21								
231										
	335 829	984								
0.10										
oth (m) 2.4	3.3 0.1									
lay (s) 22.2		0								
ပ	O O									
/ (s) 22.2		9.0								
Approach LOS C	O									
Intersection Summary										
Average Delay	1.4									
Intersection Capacity Utilization	55.1%		ICU Level of Service	Service			മ			
Analysis Period (min)	15									

Without Kerr St Improvements
BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 8: Kerr Street & Elmwood Road

Mouomont	0		Q	TON	TOO	CDD	
MOVELLIEILL	TO.	EDN	NDL	IQN	Igo	SDN	
Lane Configurations	>			÷	æ		
Traffic Volume (veh/h)	15	10	2	465	220	40	
Future Volume (Veh/h)	15	10	2	465	520	40	
Sign Control	Stop			Free	Free		
Grade	%0			%0	%0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	
Hourly flow rate (vph)	16	£	2	489	247	42	
Pedestrians	32						
Lane Width (m)	3.6						
Walking Speed (m/s)	[
Percent Blockage	က						
Right turn flare (veh)							
Median type				None	None		
Median storage veh)							
Upstream signal (m)				103	262		
pX, platoon unblocked	0.95	0.92	0.92				
vC, conflicting volume	1102	603	624				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	836	520	543				
tC, single (s)	6.4	6.3	4.3				
tC, 2 stage (s)							
tF(s)	3.5	3.4	2.4				
p0 queue free %	ᆶ	86	66				
cM capacity (veh/h)	286	479	834				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	27	494	289				
Volume Left	16	2	0				
Volume Right	7	0	42				
SH	342	834	1700				
Volume to Capacity	0.08	0.01	0.35				
Queue Length 95th (m)	1.9	0.1	0.0				
Control Delay (s)	16.4	0.2	0.0				
Lane LOS	ပ	∢					
Approach Delay (s)	16.4	0.2	0.0				
Approach LOS	O						
Intersection Summary							
Average Delay	:		0.5	9		-	
Intersection Capacity Utilization	ition		40.0%	೨	ICU Level of Service	Service	Α

Without Kerr St Improvements BA Group - EFS

Timings
Future Total PM (Phase 2) Kerr St Closure
9: Kerr Street & Stewart Street

→	SBT	4	410	410	Ϋ́	9		9		24.0	32.0	45.0	%0.09	39.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	C-Min	10.0	14.0	35						
۶	SBL		22	22	pm+pt	Ψ-	9	Ψ.		0.9	10.0	10.0	13.3%	7.0	3.0	0.0			Lead	Yes	3.0	3.0	0.0	0.0	None									
←	NBT	4	345	345	Ν Α	2		2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1	0.0	5.4	Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32						
•	NBL		9	10	Perm		2	2		24.0	32.0	35.0	46.7%	29.6	3.3	2.1			Lag	Yes	4.0	3.0	0.0	0.0	C-Min	10.0	14.0	32				of Green		
Ļ	WBT	4	15	15	Ν Α	∞		∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				rL, Start		
-	WBL		9	9	Perm		∞	∞		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				and 6:SB		
†	EBT	4	9	10	Ϋ́	4		4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1	0.0	5.4			4.0	3.0	0.0	0.0	None	10.0	13.0	20				2:NBTL		
4	EBL		20	20	Perm		4	4		10.0	30.0	30.0	40.0%	24.6	3.3	2.1					4.0	3.0	0.0	0.0	None	10.0	13.0	20				d to phase		rdinated
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 75	Actuated Cycle Length: 75	Offset 13 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	Natural Cycle: 75	Control Type: Actuated-Coordinated

Without Kerr St Improvements

Synchin

Splits and Phases: 9: Kerr Street & Stewart Street

★ Ø2 (R)

01

♦ Ø6 (R)

Queues

Queues

9: Kerr Street & Stewart Street

Upper Kerr Village (8124-01)

- Constant					
Laire Gloup	EBT	WBT	NBT	SBT	
Lane Group Flow (vph)	8	109	402	560	
v/c Ratio	0.29	0.29	0.31	0.47	
Control Delay	21.6	10.0	7.5	9.5	
Queue Delay	0.0	0.0	0.0	0.0	
Total Delay	21.6	10.0	7.5	9.5	
Queue Length 50th (m)	8.5	3.4	16.0	25.7	
Queue Length 95th (m)	16.5	13.0	48.1	78.1	
Internal Link Dist (m)	71.6	36.6	141.0	0.62	
Turn Bay Length (m)					
Base Capacity (vph)	44	225	1295	1185	
Starvation Cap Reductn	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	
Storage Cap Reductn	0	0	0	0	
Reduced v/c Ratio	0.18	0.20	0.31	0.47	

Without Kerr St Improvements BA Group - EFS

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HCM Signalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 9: Kerr Street & Stewart Street

232 267 c0 05 0.03 0.29 0.46 26.8 26.2 1.00 1.00 1.0 0.4 27.8 26.5 C C C
232 232 005 008 0.29 1.00 1.0 27.8 27.8

Without Kerr St Improvements

BA Group - EFS

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Timings 10: Dorval Road & Wyecroft Road

Future Total PM (Phase 2) Kerr St Closure	Upper Kerr Village (8124-01)
	& Wyecroft Road

→	SBT	4413	1355	1355	NA	9		9		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0									
۶	SBL	F	09	09	Prot	_		-		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None											404	s c
←	NBT	443	1580	1580	¥	2		2		20.0	41.0	42.0	35.0%	35.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	C-Min	7.0	27.0	0									4
•	NBL	*	100	100	pm+pt	2	7	2		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0:0	2.0	Lead	Yes	2.0	3.0	0:0	0.0	None												
4	WBR	¥L.	405	405	hm+ov	-	∞	-		7.0	12.0	17.0	14.2%	12.0	3.0	2.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							d Green				6 03	218
ļ	WBT	*	22	22	ΑN	∞		∞		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				T, Start o					
-	WBL	*	65	65	pm+pt	က	∞	က		7.0	12.0	21.0	17.5%	16.0	3.0	5.0	0.0	5.0	Lead	Yes	2.0	3.0	0.0	0.0	None							and 6:SB			ft Road		
†	EBT	₩	150	150	Ν	4		4		10.0	25.0	40.0	33.3%	33.0	4.0	3.0	0.0	7.0	Lag	Yes	2.0	3.0	0.0	0.0	None	7.0	11.0	0				2:NBTL			& Wyecro		
4	EBL	K.	382	382	Prot	7		7		7.0	12.0	21.0	17.5%	16.0	3.0	2.0	0.0	2.0	Lead	Yes	2.0	3.0	0.0	0.0	None							to phase		inated	10: Dorval Road & Wyecroft Road	~	2
	Lane Group	Lane Configurations	Traffic Volume (vph)	Future Volume (vph)	Turn Type	Protected Phases	Permitted Phases	Detector Phase	Switch Phase	Minimum Initial (s)	Minimum Split (s)	Total Split (s)	Total Split (%)	Maximum Green (s)	Yellow Time (s)	All-Red Time (s)	Lost Time Adjust (s)	Total Lost Time (s)	Lead/Lag	Lead-Lag Optimize?	Vehicle Extension (s)	Minimum Gap (s)	Time Before Reduce (s)	Time To Reduce (s)	Recall Mode	Walk Time (s)	Flash Dont Walk (s)	Pedestrian Calls (#/hr)	Intersection Summary	Cycle Length: 120	Actuated Cycle Length: 120	Offset: 103 (86%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	Natural Cycle: 90	Control Type: Actuated-Coordinated	Splits and Phases: 10: Dorv	97 (B)	42.8

Without Kerr St Improvements BA Group - EFS

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01) Queues 10: Dorval Road & Wyecroft Road

	1	†	>	ļ	4	•	—	۶	→	
ane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	
ane Group Flow (vph)	418	353	71	09	440	109	1760	65	1701	
/c Ratio	0.98	0.58	0.27	0.34	0.82	0.48	0.89	0.09	0.68	
ontrol Delay	90.1	25.8	33.8	54.1	42.3	19.4	35.5	39.0	25.9	
lueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
otal Delay	90.1	25.8	33.8	54.1	42.3	19.4	35.5	39.0	25.9	
Jueue Length 50th (m)	51.2	18.6	12.4	13.5	73.7	7.2	148.4	6.5	109.8	
Jueue Length 95th (m)	#82.7	32.8	22.0	25.5	98.0	m9.6 m#184.3	#184.3	12.2	151.5	
ntemal Link Dist (m)		155.6		199.3			494.4		672.1	
urn Bay Length (m)	115.0		145.0			65.0		125.0		
iase Capacity (vph)	428	1011	340	474	535	253	1977	869	2511	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
pillback Cap Reductn	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
educed v/c Ratio	0.98	0.35	0.21	0.13	0.82	0.43	0.89	0.09	89.0	

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

Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 10: Dorval Road & Wyecroff Road

	4	†	1	>	↓	4	•	←	•	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	K.	₩		<u>, </u>	*	*-	<u>, </u>	4413		F	441	
Traffic Volume (vph)	382	150	175	65	22	405	100	1580	40	09	1355	210
Future Volume (vph)	382	120	175	65	22	405	100	1580	40	09	1355	210
Total Lost time (s)	0081	0061	0061	1900	1900	1900	1900	0061	0061	200	0061	0061
Lane Util. Factor	0.97	0.95		1.00	1.00	100	1.00	0.91		0.97	0.91	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	1.00	1.00	1.00		1:00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00	0.85	1.00	1.00		1.00	0.98	
Fit Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	3213	3177		1783	1727	1592	1736	5045		3502	4991	
Flt Permitted	0.95	1.00		0.54	1.00	1.00	0.09	1.00		0.95	1.00	
Satd. Flow (perm)	3213	3177		1014	1727	1592	173	5045		3502	4991	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	418	163	190	71	9	440	109	1717	43	65	1473	228
RTOR Reduction (vph)	0	163	0	0	0	28	0	2	0	0	12	0
Lane Group Flow (vph)	418	190	0	71	9	382	109	1758	0	65	1689	0
Confl. Peds. (#/hr)	_		4	4		_	_		_	_		_
Heavy Vehicles (%)	%6	4%	5%	1%	10%	1%	4%	2%	2%	%0	1%	2%
Bus Blockages (#/hr)	0	2	0	0	0	0	0	3	0	0	0	0
Turn Type	Prot	NA		pm+pt	¥	vo+mq	pm+pt	¥		Prot	NA	
Protected Phases	7	4		က	∞	~	5	2		_	9	
Permitted Phases				∞		∞	2					
Actuated Green, G (s)	16.0	17.1		19.9	10.5	34.4	56.5	45.6		23.9	58.6	
Effective Green, g (s)	16.0	17.1		19.9	10.5	34.4	56.5	45.6		23.9	58.6	
Actuated g/C Ratio	0.13	0.14		0.17	0.09	0.29	0.47	0.38		0.20	0.49	
Clearance Time (s)	2.0	7.0		2.0	7.0	2.0	2.0	7.0		2.0	7.0	
Vehicle Extension (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lane Grp Cap (vph)	428	452		228	151	456	223	1917		269	2437	
v/s Ratio Prot	c0.13	90.0		0.02	0.03	c0.17	0.04	c0.35		0.02	0.34	
v/s Ratio Perm				0.03		0.07	0.18					
v/c Ratio	0.98	0.42		0.31	0.40	0.84	0.49	0.92		0.09	69.0	
Uniform Delay, d1	21.8	46.9		43.5	21.8	40.2	19.1	35.4		39.2	23.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	0.93	0.93		1.00	1.00	
Incremental Delay, d2	37.4	د .		9.	3.6	13.9	[-	2.9		0.1	1.6	
Delay (s)	89.2	48.3		45.1	55.3	54.0	18.9	35.7		39.3	25.4	
Level of Service	ш			□	ш		ш			Ω	O	
Approach Delay (s)		20.2			53.1			34.7			25.9	
Approach LOS		ш			Ω			O			ပ	
Intersection Summary												
TOTAL DOOD CANADA			000		0000	000C MOH	9		6			
HCM 2000 Control Delay			23.50	É	JM 2000	Level or	Service		2			
HCM 2000 Volume to Capacity ratio	ity ratio		0.30	ć	,	1			2			
Actuated Cycle Length (s)	.c.		120.0	ე ⊆	III ove	Sum of lost time (s)			Z4:0			
Analysis Period (min)	5		15	2					1			
Criffical Japa Group			2									
C Ollical Laile Gloup												

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Without Kerr St Improvements BA Group - EFS

HCM Unsignalized Intersection Capacity Analysis Future Total PM (Phase 2) Kerr St Closure 11: Speers Road & Interim Connection

																																							A	
																										SB 2	38	0	88	730	0.05	1.3	10.2	В						
•	SBR	ĸ.	32	સ		0.92	æ									0.79	714			116	6.9		3.3	92	730	SB 1	0	0	0	1700	0.11	0.0	0.0	⋖	10.2	മ			f Service	
۶	SBL	-	0	0 0	dolo 00/	0.92	0									0.82	1900	1408	492	1369	8.9	2.8	3.5	19	244	WB2	202	0	43	1700	0.30	0.0	0.0						ICU Level of Service	
4	WBR		9 9	9		0.92	43																			WB1	924	0	0	1700	0.54	0.0	0.0		0.0				2	
ţ	WBT	₹	1275	1275	B %	0.92	1386						TWLTL	2	162											EB3	492	0	0	1700	0.29	0.0	0.0					0.2	46.5%	15
†	EBT	#	905	905	- A	0.92	984						TWLTL TWLTL	2	73											EB2	492	0	0	1700	0.29	0.0	0.0							
1	EBF	<u></u>	0	0		0.92	0									0.79	1429			1018	4.1		2.2	100	547	EB 1	0	0	0	1700	0.00	0.0	0.0		0.0				no	
	Movement	Lane Configurations	Traffic Volume (veh/h)	Future Volume (Veh/h)	Signicolition	Peak Hour Factor	Hourly flow rate (vph)	Pedestrians	Lane Width (m)	Walking Speed (m/s)	Percent Blockage	Right turn flare (veh)	Median type	Median storage veh)	Upstream signal (m)	pX, platoon unblocked	vC, conflicting volume	vC1, stage 1 conf vol	vC2, stage 2 conf vol	vCu, unblocked vol	tC, single (s)	tC, 2 stage (s)	tF (s)	p0 queue free %	cM capacity (veh/h)	Direction, Lane #	Volume Total	Volume Left	Volume Right	cSH	Volume to Capacity	Queue Length 95th (m)	Control Delay (s)	Lane LOS	Approach Delay (s)	Approach LOS	Intersection Summary	Average Delay	Intersection Capacity Utilization	Analysis Period (min)

Without Kerr St Improvements

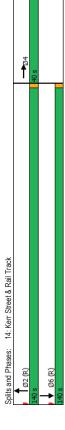
BA Group - EFS

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Timings 14: Kerr Street & Rail Track

Future Total PM (Phase 2) Kerr St Closure	Upper Kerr Village (8124-01)
Future Total PM (P	
	×

Lane Group	707	\$	80	
Lane Configurations				
Traffic Volume (vph)				
Future Volume (vph)				
Turn Type				
Protected Phases	2	4	9	
Permitted Phases				
Detector Phase				
Switch Phase				
Minimum Initial (s)	2.0	2.0	5.0	
Minimum Split (s)	22.0	22.0	22.0	
Total Split (s)	140.0	40.0	140.0	
Total Split (%)	%82	25%	%82	
Maximum Green (s)	138.0	38.0	138.0	
Yellow Time (s)	2.0	5.0	2.0	
All-Red Time (s)	0.0	0.0	0.0	
Lost Time Adjust (s)				
Total Lost Time (s)				
Lead/Lag				
Lead-Lag Optimize?				
Vehicle Extension (s)	3.0	3.0	3.0	
Minimum Gap (s)	3.0	3.0	3.0	
Time Before Reduce (s)	0.0	0.0	0.0	
Time To Reduce (s)	0.0	0.0	0.0	
Recall Mode	Max	Max	Max	
Walk Time (s)	7.0	7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	
Intersection Summary				
Cycle Length: 180				
Actuated Cycle Length: 180				
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	phase 2:∿	BT and (S:SBT, S	start of Green
Natural Cycle: 45				
Control Type: Pretimed				



Without Kerr St Improvements BA Group - EFS

Queues 14: Kerr Street

Future Total PM (Phase 2) Kerr St Closure

K C C C C C C C C C C C C C C C C C C C	did
14: Kerr Street & Rail Track	Upper Kerr Village (8124-01)
Lane Group	
Lane Group Flow (vph)	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summ

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Without Kerr St Improvements BA Group - EFS

HCM Signalized Intersection Capacity Analysis 14: Kerr Street & Rail Track

Future Total PM (Phase 2) Kerr St Closure Upper Kerr Village (8124-01)

	1	†	<u> </u>	\	Ļ	4	•	—	4	۶	→	*
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ŧ						*			*	
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)												
Lane Util. Factor												
Fr												
Flt Protected												
Satd. Flow (prot)												
Flt Permitted												
Satd. Flow (perm)												
Peak-hour factor, PHF	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0	96.0
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Vehicles (%)	%0	%0	%0	%0	%0	%0	%0	1%	%0	%0	1%	%0
Turn Type												
Protected Phases		4						2			9	
Permitted Phases												
Actuated Green, G (s)												
Effective Green, a (s)												
Actuated g/C Ratio												
Clearance Time (s)												
Lane Grp Cap (vph)												
v/s Ratio Prot												
v/s Ratio Perm												
v/c Ratio												
Uniform Delay, d1												
Progression Factor												
Incremental Delay, d2												
Delay (s)												
Level of Service												
Approach Delay (s)		0.0			0.0			0.0			0.0	
Approach LOS		∢			⋖			⋖			4	
Intersection Summary												
HCM 2000 Control Delay			0.0	¥	HCM 2000 Level of Service	evel of S	ervice		⋖			
HCM 2000 Volume to Capacity ratio	ratio		0.00									
Actuated Cycle Length (s)			180.0	S	Sum of lost time (s)	time (s)			4.0			
Intersection Capacity Utilization	_		%0:0	ੁ	ICU Level of Service	Service			⋖			
Analysis Period (min)			15									
c Critical Lane Group												

Without Kerr St Improvements BA Group - EFS