

Transportation: Engineering • Planning • Design

### MEMORANDUM

Ref: 1831A

To: Jay Bisognano Torrington Properties, Inc.

From: Stephen G. Pernaw, P.E., PTOE

Subject: Proposed Mixed-Use Site Portsmouth, New Hampshire

Date: September 25, 2018

On July 18, 2018 our office published the report entitled "*Draft Traffic Impact and Site Access Study - Proposed Mixed-Use Site*" for Torrington Properties, Inc. to assess the traffic impacts associated with the proposed residential/commercial development located on the east side of US1 Bypass at the site of the Frank Jones Center in Portsmouth, New Hampshire. We are now in receipt of peer review comments from The Engineering Corporation (TEC) dated September 7, 2018. The purpose of this memorandum is to provide responses to each of their comments.

<u>TEC Comment 1: Study Area</u> – "The Traffic Impact and Site Access Study (TISAS) evaluates a reasonable study area for the purposes of evaluating the potential traffic impacts to the surrounding street system with the construction of the proposed development and the realignment/extension of Cate Street. TEC concurs that the scope of the study is in general accordance with NHDOT guidelines; and was previously approved by NHDOT and the City."

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 2: Traffic Counts</u> – "Traffic counts used within the TISAS were conducted in May 2018 during a period in which area schools were in session. The May counts were seasonally adjusted upward by 7% during the weekday evening peak hour and 8% during the Saturday midday peak hour to reflect peak month conditions, consistent with NHDOT standards. This is generally reflective of summertime volumes in the seacoast area. TEC concurs with the use of these traffic volumes and adjustment factors based on NHDOT guidelines. The weekday evening peak commuter hour and Saturday midday peak commercial

hour were studied with the TISAS to determine the project's overall effect on the roadway system. While TEC concurs that these selected time periods are generally appropriate for a mixed-use development, Stephen G. Pernaw and Company, Inc. (SGP) should provide justification for not including the weekday morning peak hour within the study as the morning peak hour of the residential dwelling units and office space within the development will typically overlap with the morning peak hours of the adjacent street system."

**SGP & Company, Inc. Response:** The analysis periods were discussed with the NHDOT and City representatives at the scope meeting conducted on April 27, 2018, and it was determined and agreed upon that the Weekday PM and Saturday Midday peak periods would suffice. The NHDOT automatic traffic recorder counts for the US1 Bypass and Bartlett Street that are included in Appendix B show that the AM peak hour volumes are considerably lower than the PM peak hour volumes on weekdays.

1



<u>TEC Comment 3: Background Growth</u> – "The TISAS uses an annual traffic volume growth adjustment factor of 1.0 percent per year based on standard rates approved by NHDOT. SGP concurrently overlaid projected traffic volumes associated with five pending development projects within the study area. TEC concurs with the use of these adjacent development projects and adjustment factors based on NHDOT guidelines. The future conditions in 2020 (opening year) and 2030 (10-year horizon) were studied in conformance with NHDOT requirements."

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 4: Crash Data</u> – "No motor vehicle crash data was provided within the TISAS. SGP should obtain and review crash data at the study area intersections to determine whether any specific crash trends exist. This is primarily of concern at the two ends of the proposed Cate Street realignment. The crash data typically indicates the number, type, and severity of crashes at the study area intersections for the most recent three years on record. SGP should further provide documentation of other traffic safety related issues/deficiencies at the intersections and subject roadways, such as sight distances, if applicable."

**SGP & Company, Inc. Response:** Crash data from the State of New Hampshire Department of Transportation for the most recent three-year period (2013 to 2015) was researched to identify accident rates and patterns in the study area. Over the three-year period, the Location Data Reports indicate that 2,407 crashes were recorded on a city-wide basis. It should be noted that this database is considered to be a subset of the total collisions as not all incidents are required to be reported to the State. Of these, forty-one crashes contained sufficient detail to locate them in the study area. These reports, along with a summary table, are attached (see Attachments 1-3).

Sixteen crashes occurred in the vicinity of the US1 Bypass/Coakley Road/Cottage Street intersection. There were eight collisions that resulted in injuries to eleven persons. The majority (81%) of the crashes involved two or more vehicles. Two collisions were the result of a collision with a fixed object and two crashes were rear-end collisions. Inclement weather or unfavorable surface conditions may have been a contributing factor in four of these sixteen crashes.

Twelve crashes occurred in the vicinity of the US1 Bypass/Borthwick Avenue intersection. These crashes resulted in injuries to six persons. The majority (92%) of the collisions involved two or more vehicles. Inclement weather or unfavorable surface conditions may have been a contributing factor in two of these twelve crashes.

Five crashes occurred in the vicinity of the Bartlett Street/Cate street intersection. There was one collision that resulted in injury to one person and the majority (80%) of the crashes involved two or more vehicles. Inclement weather or unfavorable surface conditions may have been a contributing factor in four of the five collisions.

Eight collisions occurred in the vicinity of the Bartlett Street/Islington Street intersection. There was one crash that resulted in injury to one person. All of the crashes involved two vehicles. Inclement weather or unfavorable surface conditions were not a contributing factor in any of these eight collisions.

No fatalities were reported in this study group. There were no discernible trends in terms of crash frequency as 11 crashes occurred in 2013, 16 occurred in 2014, and 14 occurred in 2015. In terms of monthly variations, August and February were the highest months (8 crashes each) and the lowest months included March, April, September and November (1 crash each). In terms of daily variations, nine crashes over the three-year period occurred on Wednesdays and Fridays, and the lowest day was Saturday with two crashes. The sight distance looking left and right from the Cate Street approach is applicable and is adequate. Although the crash rate at the Bartlett Street/Cate Street intersection is nominal, we share TEC's concern with sight distance on the Bartlett Street northbound approach to the intersection. Providing a left-turn pocket would be helpful, if it is feasible. Alternative configurations for this intersection could eliminate this concern.

2



<u>TEC Comment 5: Site Trip Generation</u> – "The TISAS uses data published in the industry standard Institute of Transportation Engineers (ITE) publication, Trip Generation, 10th Edition to estimate the traffic generated by the proposed development. The TISAS uses data found under Land Use Code (LUC) 220 - Multi-Family Housing (Low-Rise) for the townhouse units, LUC 221 - Multi-Family Housing (High Rise) for the apartment units, LUC 710 - General Office Building for the office areas, and LUC 932 - High Turnover (Sit-Down) Restaurant, LUC 930 - Fast Casual Restaurant, and LUC 820 -Shopping Center for the retail areas of the site. TEC concurs with these land uses and general traffic generation methodology.

The TISAS indicates that a portion of the traffic generated by the commercial areas of the site will be "pass-by" trips, or vehicles generated by the site that are existing on the immediately adjacent roadway system, specifically the US Route 1 Bypass. This is appropriate for the retail and restaurant areas of the site. It appears that some pass-by credit was taken for the office areas of the site within the study. Office land uses are primary trip generators and are not known to attract pass-by trips. While the removal of the pass-by credit will not materially impact the results of the overall analyses due to the relatively small size of the office area proposed, the trip generation calculations should be revised to remove any pass-by trips associated with the office land use.

The ITE publication, Trip Generation Handbook, 3<sup>rd</sup> Edition, indicates that retail land uses have an average of 34% pass-by trips during the weekday evening peak hour and 26% during the Saturday midday peak hour and high-turnover sit-down restaurants have an average pass-by rate of 43% during the weekday evening peak hour. The TISAS applies a 36.5% pass-by rate during the weekday evening peak hour and 39.8% during the Saturday midday peak hour, which is appropriate for the proposed retail/restaurants on the site.

No internal capture rate was applied between the land uses on the site. TEC concurs that this provides a conservative representation of the trips generated by the site."

**SGP & Company, Inc. Response:** Page 19 of the report states that "*Restaurants and retail trips are comprised of both primary trips and pass-by trips which are drawn from the existing traffic stream on US1 Bypass.*" The 84 (PM) and 126 (SAT) pass-by trips shown on Table 1B (Page 19) are attributable to the restaurants and retail uses only. No pass-by credit was taken for the office space within the development. There is no need to revise the trip generation calculations in the study.

<u>TEC Comment 6: Trip Distribution</u> – "The traffic generated by the proposed project was distributed onto the adjacent roadway system based upon available Journey-to-Work data published by the US Census Bureau for persons residing in the City of Portsmouth for the residential portions of the development and for persons working in the City of Portsmouth for the office portion of the development. This form of trip distribution calculation is consistent with industry standards and TEC concurs with the methodology."

"The Site Generated Traffic Volume Figures within Appendix G include both the site generated traffic volumes and the diverted link volumes. TEC requests a figure detailing only the site generated traffic be provided to ensure consistency with the Journey-to-Work distribution and for clarity."

**SGP & Company, Inc. Response:** The requested figures showing the distribution of the site generated traffic volumes are attached (see Attachments 4-11).

<u>TEC Comment 7: Traffic Diversion</u> – "With the relocation and extension of Cate Street to intersect US Route 1 Bypass at Borthwick Avenue and close the connection with Cottage Street, traffic will be diverted to use the new roadway connection. The TISAS identifies five different traffic diversion patterns. TEC concurs with the existing patterns that will divert to the new Cate Street extension. The Diverted Traffic Volumes figures within the report are not consistent with the anticipated diversions. SGP should revise and reissue the figures. TEC recommends that SGP provide detailed tables or figures illustrating the volumes of traffic being diverted in each pattern scenario for review to ensure consistency and clarity."



**SGP & Company, Inc. Response:** Supplemental figures for each trip diversion pattern are attached. The diverted traffic volume figures in Appendix G have been updated as the draft report inadvertently included a superseded version of that Figure (see Attachments 12-23).

<u>TEC Comment 8: Capacity and Queue Analysis</u> – "*TEC generally concurs with the results of the capacity and queue analysis provided as part of the TISAS; utilizing Highway Capacity Manual 2010 (HCM 2010) methodology as modeled by Synchro 10.*"

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

<u>TEC Comment 9</u>: "At the intersection of US 1 Bypass / Cottage Street / Coakley Road, the capacity and queue analyses depict significant vehicle delay and queues on various approaches during the weekday evening peak hour in the 2030 No Build and Build condition. The addition of site generated traffic increases the delay and extends queue lengths on the northbound and westbound approaches. Suggested mitigation at this intersection includes the addition of a northbound right turn lane and shortening the northbound left turn lane queueing length to 50 feet. TEC notes that the addition of a northbound right turn lane may not be feasible within the existing US 1 Bypass right-of-way."

"The report does attempt to document the influence of the Portsmouth Rotary on the operations at intersections along Route 1 Bypass to the south by using reduced lane utilization factors on the northbound approach movement during the peak hour studied. Observations of the operation of this roadway during the evening peak hour indicate that the queues from the rotary often extend beyond the Cottage Street / Coakley Road when the rotary is saturated with traffic. While TEC does not recommend incorporating rotary analysis as part of this application review, it is important to document the interconnected operations of other transportation facilities in this area."

**SGP & Company, Inc. Response:** Field survey is being conducted to determine the availability of rightof-way along the Bypass for the recommended right-turn lane. The two signalized study area intersections on the US1 Bypass have controllers that are vehicle-actuated and coordinated.

<u>TEC Comment 10</u>: "At the intersection of US 1 Bypass / Borthwick Avenue / Cate Street Extension, the capacity and queue analyses depict increased vehicle delay and queues along the eastbound Borthwick Avenue approach, westbound Cate Street Extension approach and northbound US 1 Bypass left turn movement during the weekday evening peak hour in the 2020 and 2030 Build conditions. The addition of site generated traffic increases the delay and extends the queues by one to two vehicles. Suggested mitigation at this intersection includes the modification of the westbound Cate Street Extension approach to provide a shared left/through/right turn lane and an exclusive right turn lane and extending the southbound left turn lane queueing length to approximately 200 feet. TEC notes that one of the proposed mitigation items for this intersection is increasing the signal cycle length is 120 seconds. During the weekday evening and Saturday midday peak hours, the existing cycle length is 120 seconds, rendering this mitigation item unnecessary. The improvements proposed will not fully mitigate the impact of the site generated traffic, but do reduce delays on the Borthwick Avenue approach and the Cate Street Extension approach during the weekday evening peak hour."

**SGP & Company, Inc. Response:** The existing cycle length at these intersections is 120-seconds during the PM peak hour and 110-seconds during the Saturday peak hour. TEC is correct; the mitigation item concerning cycle length on Page 35 of the report is not applicable.



<u>TEC Comment 11</u>: "The southbound left turn lane of US 1 Bypass at Borthwick Avenue / Cate Street is projected to have a 95% queue length (the generally accepted maximum queue length) of 11 vehicles, or 275 feet in the weekday evening peak hour and 13 vehicles, or 325 feet, in the Saturday midday peak hour. The left turn queue length may extend past the provided storage length during some signal cycles within peak periods, even with the proposed longer storage length. This increase in delay may encourage vehicles to divert to back to the intersection of US 1 Bypass / Cottage Street / Coakley Road to make a left turn."

SGP & Company, Inc. Response: We concur, this is certainly a possibility.

TEC Comment 12: "Should NHDOT execute on their vision to remove the traffic signal and close the median opening at US 1 Bypass / Cottage Street / Coakley Road, the intersection of US 1 Bypass / Borthwick Avenue / Cate Street Extension will require a complete redesign to accommodate the relocated traffic. With the introduction of new development traffic, existing over capacity conditions are aggravated at both US 1 Bypass / Cottage Street / Coakley Road and US 1 Bypass / Borthwick Avenue / Cate Street Extension. TEC recommends that SGP perform an alternative analysis considering the removal of the traffic signal at US 1 Bypass / Cottage Street / Coakley Road and determine the desirable lane configuration at US 1 Bypass / Borthwick Avenue / Cate Street Extension to accommodate development traffic and diverted traffic."

**SGP & Company, Inc. Response:** The NHDOT public informational meeting conducted in October 2006 regarding the traffic circle and US1 Bypass for Project 13455 included two concept plans that showed the extension of the existing median island on the Bypass through the Cottage Street/Coakley Road intersection. This would eliminate the existing traffic signal and restrict the turning movements to/from the minor approaches to a right-in/right-out pattern only. This concept plan was discussed at the April 2018 scope meeting and it is no longer being considered by the NHDOT (not included in the NHDOT Ten-Year Plan).

At the request of TEC, we have prepared hypothetical 2030 peak hour Design Hour Volumes for the Borthwick Avenue/Cate Street Extension intersection (see Attachment 24) assuming turn restrictions are in effect at Cottage Street and Coakley Road (due to the median extension). Analysis of these hypothetical projections is summarized in the table below. A more-detailed summary table is found on Attachment 25. The preliminary results indicate that the proposed median has the potential to increase the overall Build V/C ratio from 0.97 to 1.02 during the 2030 PM peak hour period (see Case B). Overall delay would increase by approximately +12 seconds. Recognizing that the southbound left-turn volume would exceed 300 vph with the hypothetical median in place, consideration was given to providing two left-turn lanes on the Bypass southbound approach (for turns onto Cate Street Extension). Case C indicates that future widening of the Bypass to provide an additional southbound lane has the potential to reasonably mitigate the impacts of the hypothetical median extension. It should be noted, Torrington Properties Inc. is <u>not</u> proposing to extend the median island on the Bypass (past Coakley Road and Cottage Street) nor widen US1 Bypass to construct the additional left-turn lane (see Attachment 26-31).

2030 Weekday PM P	eak Hour Results	i	
	CASEA	CASEB	CASEC
Overall Intersection Volume-to-Capacity Ratio	0.97	1.02	0.92
Overall Intersection Delay (sec per vehicle)	47	59	46
Overall Intersection Level of Service	D	Е	D

CASE A: Previously proposed mitigation for Build Case - See Table 6 in original report CASE B: Same as Case A with hypothetical median at Cottage & Coakley

CASE C: Same as Case B w / w idening to provide two SB left-turn lanes on the Bypass approach



<u>TEC Comment 13</u>: "At the intersection of Islington Street / Bartlett Street / Pharmacy Driveway, the capacity and queue analyses depict increased vehicle delay and queues along the eastbound Bartlett Street approach during the weekday evening peak hour in the 2020 and 2030 Build conditions. The addition of site generated traffic increases the delay on this approach, but does not increase the projected queue lengths. Improvements at this intersection are under final design by the City for construction next year. No additional lanes will be provided. Suggested mitigation at this intersection includes increasing the signal cycle length to 120 seconds. The proposed timing change reduces the delays on the Bartlett Street approach; however, the queue lengths increase. The 95% queue length on the Bartlett Street approach is projected to be 17 vehicles, or 425 feet, during the weekday evening

peak hour. TEC notes that the intersection of Bartlett Street / Cate Street is located approximately 250 feet to the west of this intersection. As a result, it is likely that the intersection of Bartlett Street / Cate Street will be blocked by queueing traffic during peak periods, causing conflicts between queuing vehicles and turning vehicles. TEC does not recommend implementation of this mitigation."

**SGP & Company, Inc. Response:** The mitigation summary on Page 35 of the report for this intersection is incorrect. The analysis was based on increasing the signal traffic signal cycle length from 80-seconds to 90-seconds during the Saturday peak hour period only. This was offered as a mitigation possibility only, and the City and its consultants will choose whichever cycle lengths they deem appropriate.

<u>TEC Comment 14</u>: "SGP analyzed the intersection of Bartlett Street / Cate Street using several different geometric layouts for the unsignalized intersection. With the addition of site generated traffic, the Cate Street approach to the intersection increases in delay and degrades in levels of service (LOS) from LOS D to LOS F in the 2030 Build condition in both the weekday evening and Saturday midday peak hours. TEC notes that the condominium development under construction at 30 Cate Street will be widening the Cate Street approach to the intersection to provide an exclusive right turn lane as a condition of their approval. The analyses within the TISAS should be revised to reflect the eastbound right turn lane as constructed within the No Build and Build analyses. Further, constructing this lane should be removed as a recommended mitigation for the subject development."

**SGP & Company, Inc. Response:** The No-Build and Build analyses have been updated as requested, and Table 9A has been updated accordingly (see Attachments 32-40).

TEC Comment 15: "The TISAS recommends maintaining the intersection geometry generally as existing, with the addition of an approach lane on Cate Street to provide a shared through/left turn lane and a right turn lane and provision of a northbound left turn lane along Bartlett Street. Of concern with maintaining this geometry is the sight distance for vehicles traveling north/westbound on Bartlett Street away from Islington Street. The distance between Cate Street and the railroad bridge over Bartlett Street is less than 100 feet, increasing the potential for rear-end accidents at the intersection should 1-2 vehicles queue to turn left into Cate Street. The addition of a left turn lane along northbound Bartlett Street to provide a short queue storage area can aid in relieving this safety concern. Realigning northbound Bartlett Street to become the through movement onto Cate Street (Alternative Configuration B within the TISAS) relocates the delay onto the Bartlett Street southbound movement, but may allow for a safer intersection geometry and increased visibility for turning movements. This configuration would potentially have an added benefit of diverting more traffic from Bartlett Street north of Cate Street and removing additional through vehicles from the neighborhood. SGP should provide additional analyses and a recommendation based not only upon delay but considering safety issues and construction feasibility."



**SGP & Company, Inc. Response:** Maintaining the current configuration of this intersection with the additional approach lane on Cate Street (by others) results in the lowest overall intersection delay. To address the sight distance concern and the potential for rear-end crashes, we recommend that additional field survey be conducted to determine if constructing a northbound left-turn pocket on Bartlett Street is feasible. At this juncture, we are not comfortable recommending Alternative Configuration B or Configuration C due to the excessive delays and queuing that are expected to occur on the Bartlett Street southbound approach.

<u>TEC Comment 16</u>: "The remaining unsignalized intersections: US 1 Bypass / Site Driveway, Bartlett Street / Shared Driveway and Cate Street with the three site driveways will all operate with acceptable levels of service in the 2030 Build condition with the addition of site generated traffic."

SGP & Company, Inc. Response: Comment acknowledged; no response necessary.

cc: Gregg M. Mikolaities, P.E., August Consulting, PLLC



Stephen G. Pernaw & Company, Inc.

# ATTACHMENTS

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ľ D Stephen G. Pernaw & Company, Inc.

Crash Summary (2013-2015)<sup>1</sup>

		US 1 ByPass/			
		Coakley Road-	US 1 ByPass/	Bartlett Strreet/	Bartlett Strreet/
		Cottage Street	Borthwick Avenue	Cate Street	Islington Street
CRASH FREC	QUENCY				
	Total Crashes	16	12	5	8
	Crashes per Year (Ave)	5.33	4.00	1.67	2.67
CRASH SEVE	ERITY				
	Property Damage Only	9	8	4	7
	Personal Injury	7	4	1	1
	Fatalities	0	0	0	0
CRASH TYPE					
	Other Motor Vehicle	12	12	4	8
	Rear End	2	0	0	0
	Head-On	0	0	0	0
	Fixed Object	2	0	0	0
	Pedestrian	0	0	0	0
	Other Object	0	0	1	0
ADVERSE CO	ONDITIONS (%)	(4) 25%	(2) 17%	(4) 80%	(0) 0%

<sup>1</sup> Source: NHDOT - Accident Location Data Report (2013-2015)

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	00001 COTTAGE STREET 0	00001 COTTAGE ST 0	00000 RT 1 BY-PASS NB 0	00000 COTTAGE ST&RT 1 BYPA 0	00000 600 RT 1 BY-PASS NB 0	-	COTTAGE STREET	COTTAGE STREET/COAKL	BYPASS NB	600 BY-PASS NB		00001 BORTHWICK AVE 0	00001 BORTHWICK AVE 0	BORTHWICK AVENUE		00001 BORTHWICK AVE 0	BORTHWICK AVENUE	00001 BORTHWICK AVE	00000 505 RT 1 BYPASS SB	00000 505 BYPASS SB	00001 BORTHWICK AVENUE	00001 BORTHWICK AVE		00000 CATE ST 0	00000 1 CATE ST 0	54 BARTLETT ST	00000 CATE ST 0		00000 BARTLETT ST 00	00000 653 ISLINGTON ST 0	653 ISLINGTON ST	00000 BARTLETT ST 00	1 BARTLETT ST
		14 14 MON 1530 PORTSMOUTH 1 BYPASS NB	14 WED 1736	14	14 SAT	14 SUN 1153	14 TUE 1447	14 TUE 1310	15 FRI	15 WED 1721	ll. Vicinity of US 1 ByPass/Borthwick Avenue Intersection	14	14 14 FRI 1530 PORTSMOUTH 1 BYPASS	14 WED	14 14 MON 1114 PORTSMOUTH ROUTE 1 BYPASS	14	15 MON	15 WED 1618	15 TUE 2119	15 FRI	15 MON 0845	15 15 FRI 0624 PORTSMOUTH ROUTE 1 BYPASS SOL	ill. Vicinity of Bartlett Street/Cate Street Intersection		114 14 FRI 0750 PORTSMOUTH 54 BARTLETT ST	15 TUE		V. Vicinity of Bartlett Street/Islington Street intersection	14 14 FRI 1924 PORTSMOUTH 674 ISLINGTON ST	15 15 WED 1850 PORTSMOUTH 1 BARTLETT ST	15 WED	15 SUN	15 MON
Vicinity	8/20/2014	10/6/2014	7/2/2014	8/3/2014	6/28/2014	10/18/2014	6/17/2014	2/4/2014	4/10/2015	7/22/2015	II. Vicinit,	5/28/2014	12/19/2014	8/20/2014	8/18/2014	10/17/2014	2/16/2015	2/11/2015	1/6/2015	8/28/2015	2/16/2015	7/31/2015	ill. Viciniî	10/24/2014	11/28/2014	8/4/2015	2/1/2015	IV. Vicini	10/10/2014	9/16/2015	5/6/2015	7/19/2015	8/31/2015

# V. Vicinity of US 1 ByPass/U-Haul Driveway Intersection

NONE

YI. Vicinity of US 1 ByPass/Existing Driveway Intersection NONE VII. Vicinity of Bartiett Street/Existing Shared Driveway Intersection

NONE

# SUMMARY OF NHDOT CRASH DATA - 2014, 2015

SUMMARY OF NHDOT CRASH DATA - 2013

Stephen G. Pernaw & Company, Inc.

SEVERITY		400			9		9		003		
aman_nwot		01 PORTSMOUTH 01 PORTSMOUTH 98 PORTSMOUTH	98 PORTSMOUTH 98 PORTSMOUTH 98 PORTSMOUTH		98 PORTSMOUTH		98 PORTSMOUTH		98 PORTSMOUTH 98 PORTSMOUTH 98 PORTSMOUTH		
DIAGRAMCOD		с 10 10 10 10 10 10 10 10 10 10 10 10 10	98 P 88 P 88 P 88 P		98 P		98 P		988 888 989		
POSTEDSPEE		35 35 30			35		25		20 25 25		
<b>A3HTA3W</b>		03 03 03			02		64		2 2 2		
LIGHTING		2 2 2			6		6		5 <del>2</del> 2		
SURFACECON		1 02			1 01		1 03		222		
ROADCONDIT		222			10		4 01		222		
ajtaaorjaa Mnðijagaor		04 04 01 01 01 01 01			04 01		04 04		04 01 99 01 04 01		
ROADDESIGN		002 08 08 08 02 08			0 20		03 0		0 6 0 0 3 0 3 0 3		
TRAFFICCON		888			02 0		0 90		05 02 02 9		
LOCFIRSTEV		1 2 3			17 0		03		323		
							U				
<b>ІИТЕ</b> ЯЗТ <b>ЯЕЕ</b>			0 COAKLEY ROAD 0 COAKLEY STREET 0 185 COTTAGE ST		1 ROUTE 1 BYPASS		0 CATE STREET		0 ISLINGTON STREET 0 653 ISLINGTON STREET 0 1 BARTLETT ST		
INTERROUTE		00000	00000		00001		00000		00000		
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		555			8		8		888		
ACDSTREET			ROUTE 1 BYPASS ROUTE 1 SOUTH BYPASS RT 1 BYPASS NB		00000 BORTHWICK AVE.		00000 124 BARTLETT STREET		1 BARTLETT STREET 1 BARTLETT STREET 653 ISLINGTON ST		
ACDROUTE		00001 00001 00001	00001 00001 00000		0000		0000		00000		
MILEMARKER			0000		0000		0000		0000		
AMMORAWER		000			0		0		000		
FEETTOMARK		00000	00000		00000		00000		00000		
NODEZNODE		0000 00883			0000		0000				
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OBJECTSTRU		0008			0 96		000		000 888		
АСDTYPE		222			2		6		222		
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<b>2JATA7D39</b>	Stre		888	ersec	000	ion	8	secti	888	section	
<b>Α</b> υίνιλατοτ	ttage		8 8 9 9 9 9 9 0 9 0 9 0 9 0 9 0 9 0 9 0	e Inte	8	rsect	000 000 000 000	Inter	000000000000000000000000000000000000000	Inter	
JATAJJATOT	d/Cot			venu	0	Inte	0	treet		way	
ACDDAY	Roa			ick A	ĭ0 ⊋	Street	31 0(	ton S		Drive	
	akley	1 MON 0 TUE 15 THU	4 WED 9 MON	prthw	2 TF	Cate :	0	sling	9 SUN 7 SAT 5 THU	Haul	
ACDDATE ACDTIME	LVicinity of US 1 ByPass/Coakley Road/Cottage Street Intersection		20130807 1314 20131223 1619 20130219 1221	II. Vicinity of US 1 ByPass/Borthwick Avenue Intersection	501049 20130808 0812 THU 000 000	III. Vicinity of Bartlett Street/Cate Street Intersection	13 006856 20130208 0720 FRI	IV. Vicinity of Bartlett Street/Islington Street Intersection	20130310 1749 20131228 1847 20130801 1125	V. Vicinity of US 1 ByPass/U-Haul Driveway Intersection	
	US 1			US 1	2018	f Bart	2013	f Bart		US 1	
ACDNUMBER	cinity of		501073 502850 006892	icinity of		licinity o	006856	/icinity o	003781 022095 021362	icinity of	NONE
ACDYEAR	N.	13 13	13 13	<u>II. V</u>	13	<u>   .</u>	13	<u>V.</u>	13 13	<u>v.v</u>	

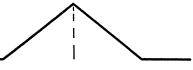
VI. Vicinity of US 1 ByPass/Existing Driveway Intersection

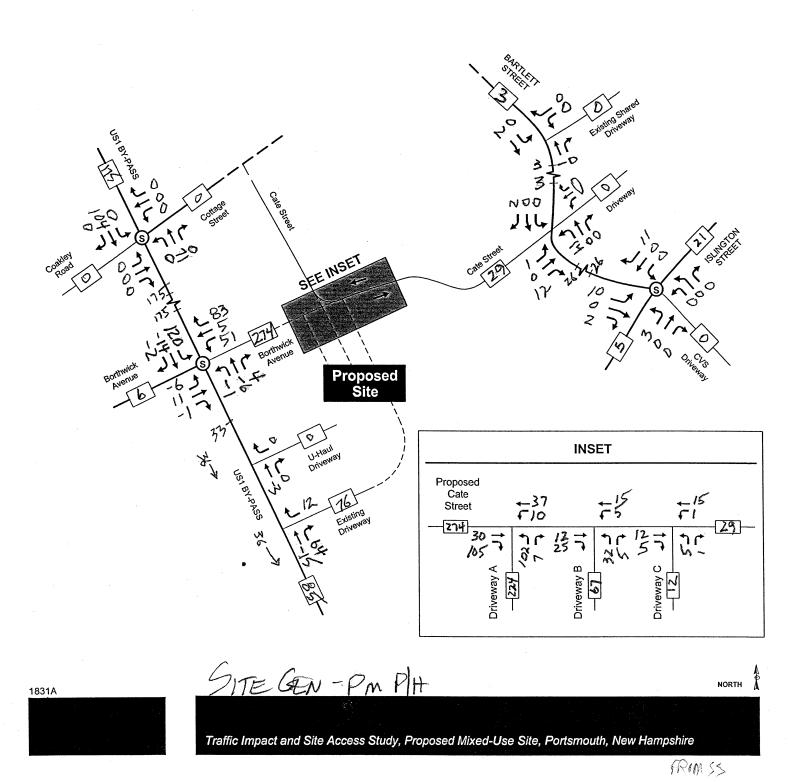
NONE

VII. Vicinity of Bartlett Street/Existing Shared Driveway Intersection

NONE

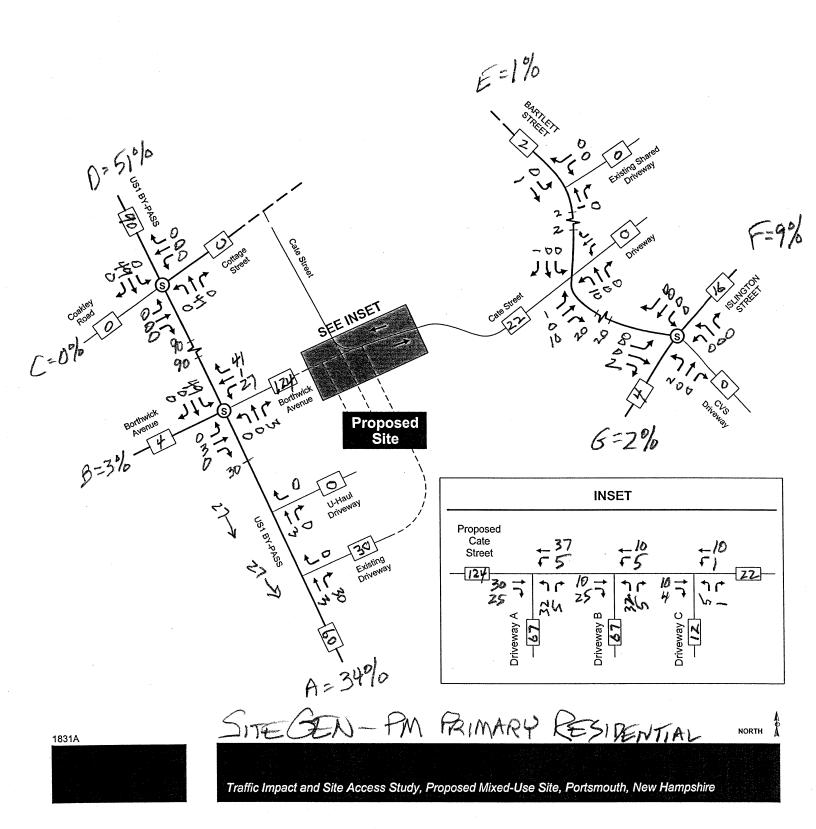


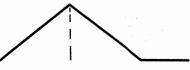


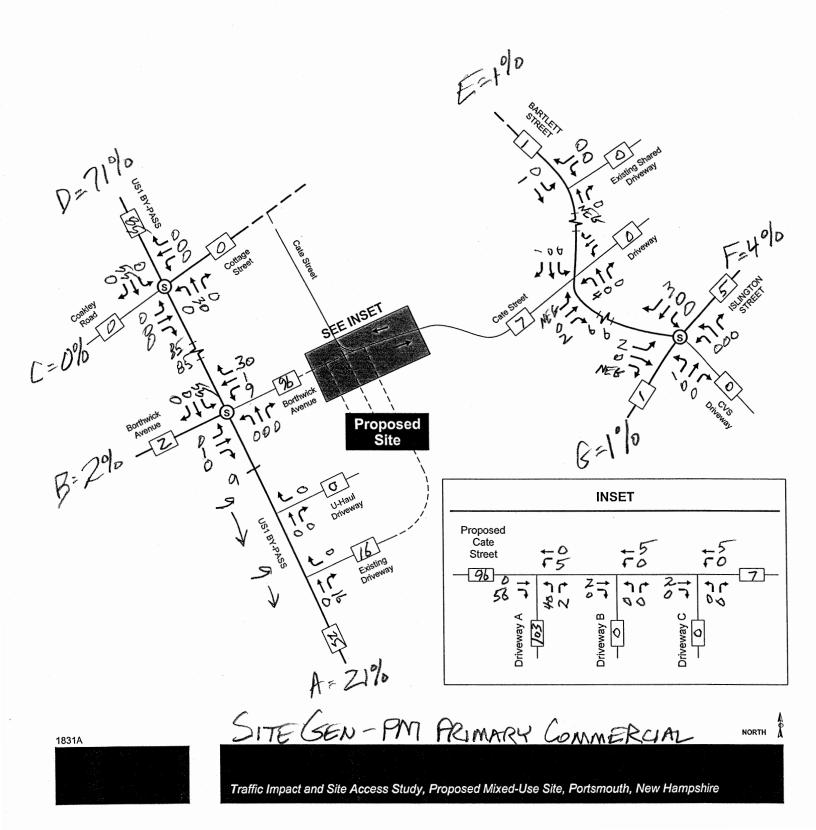




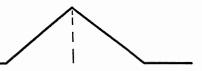


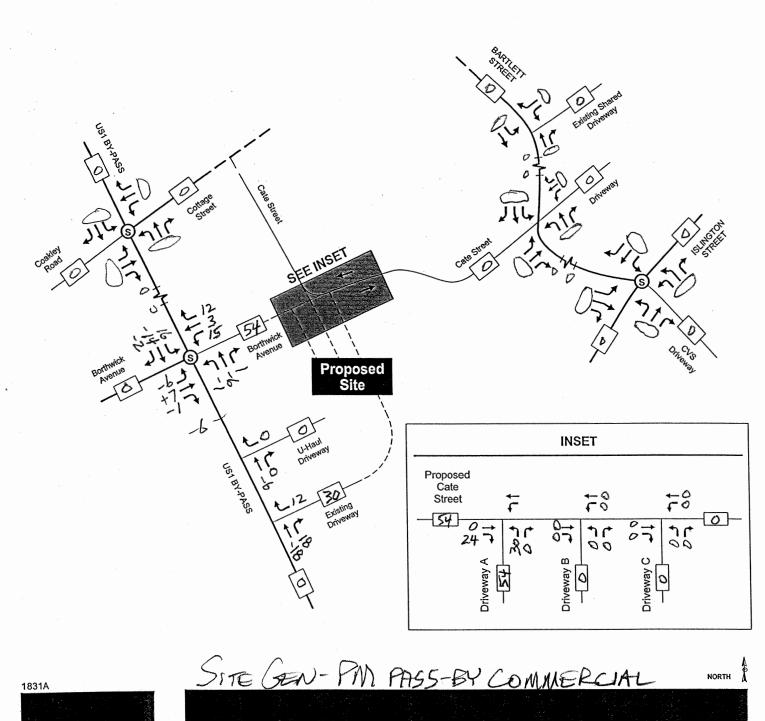








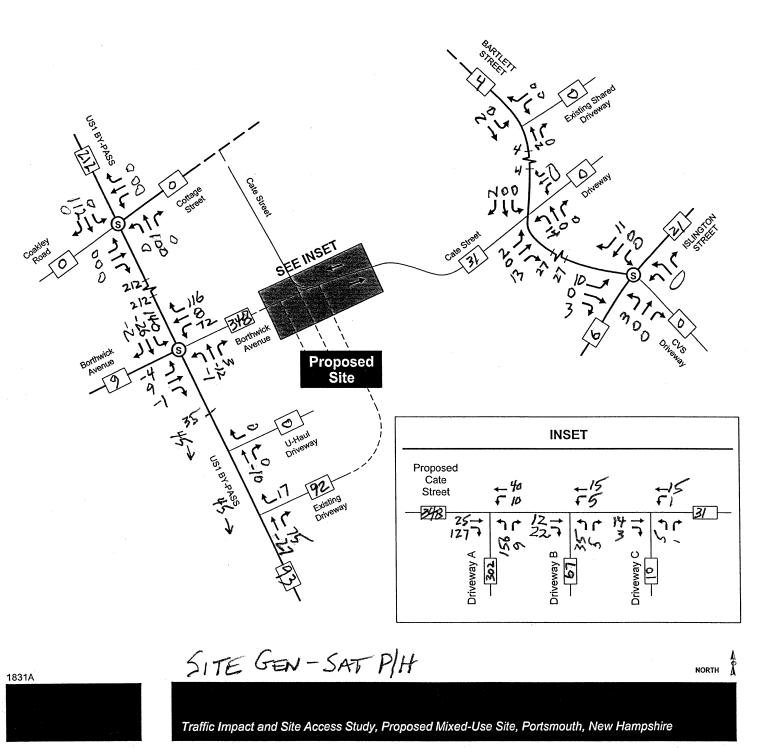




Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



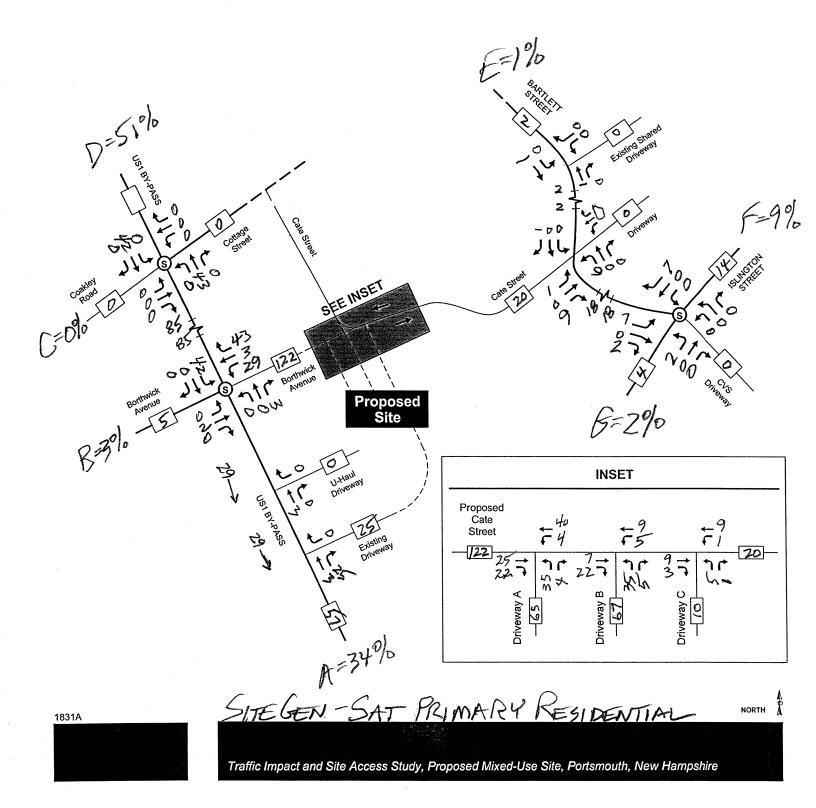




F 44



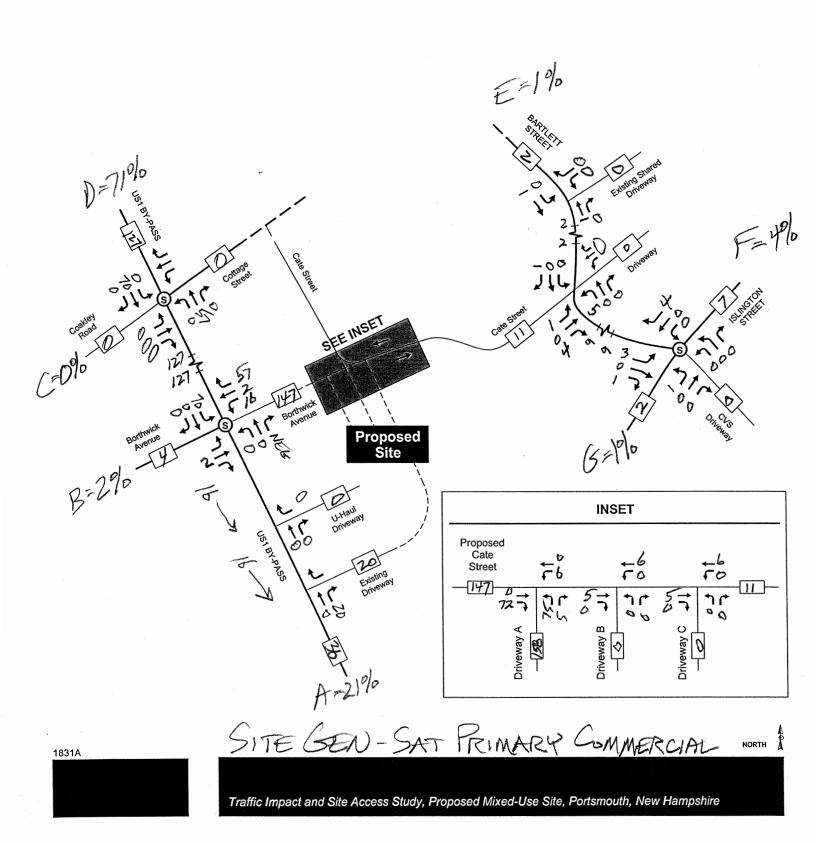






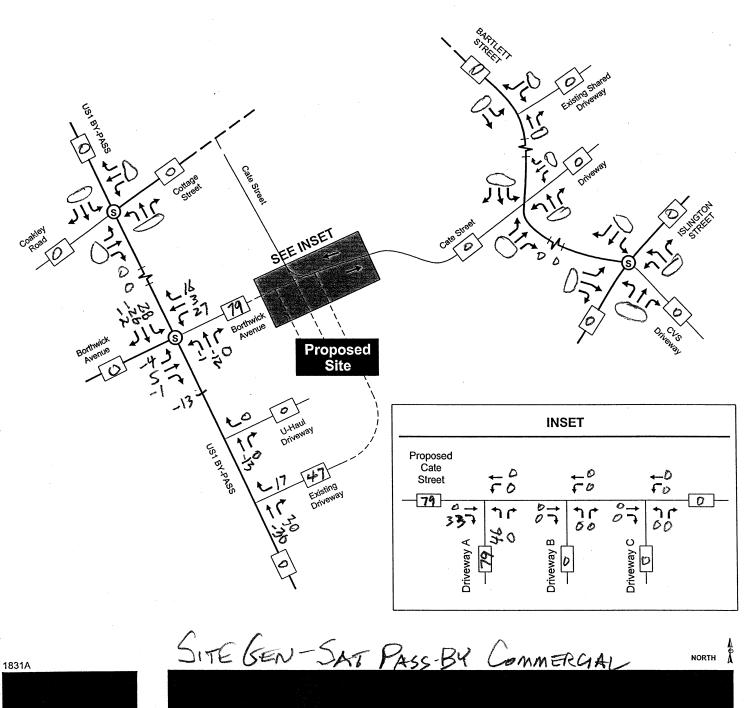




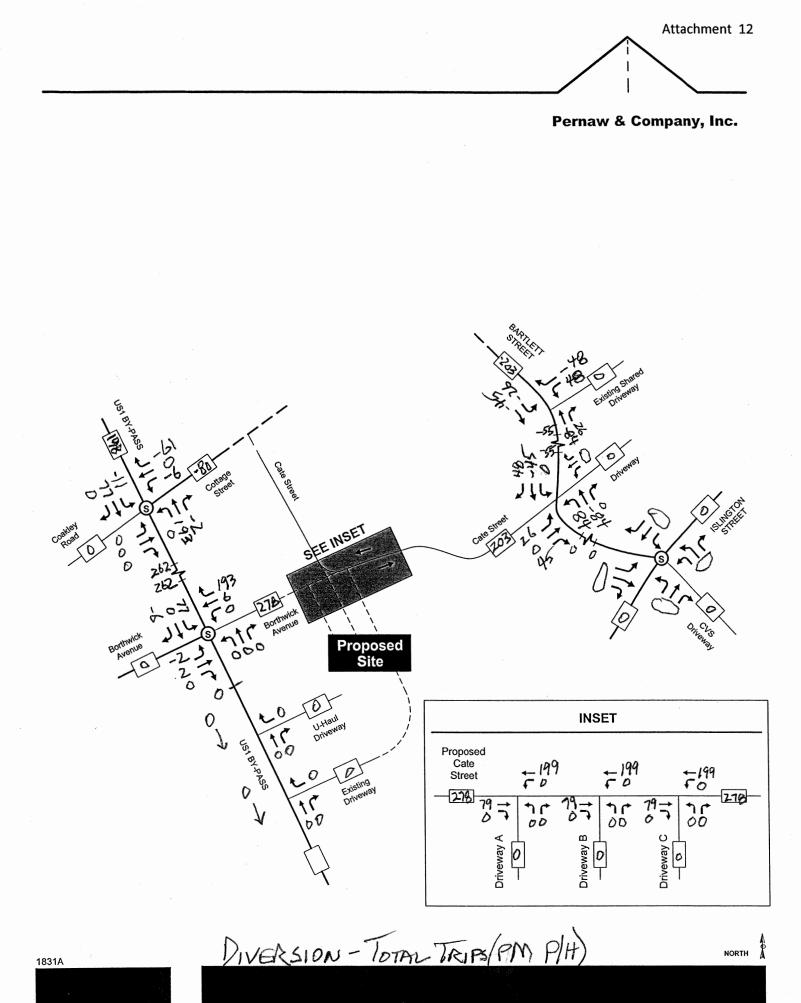








Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

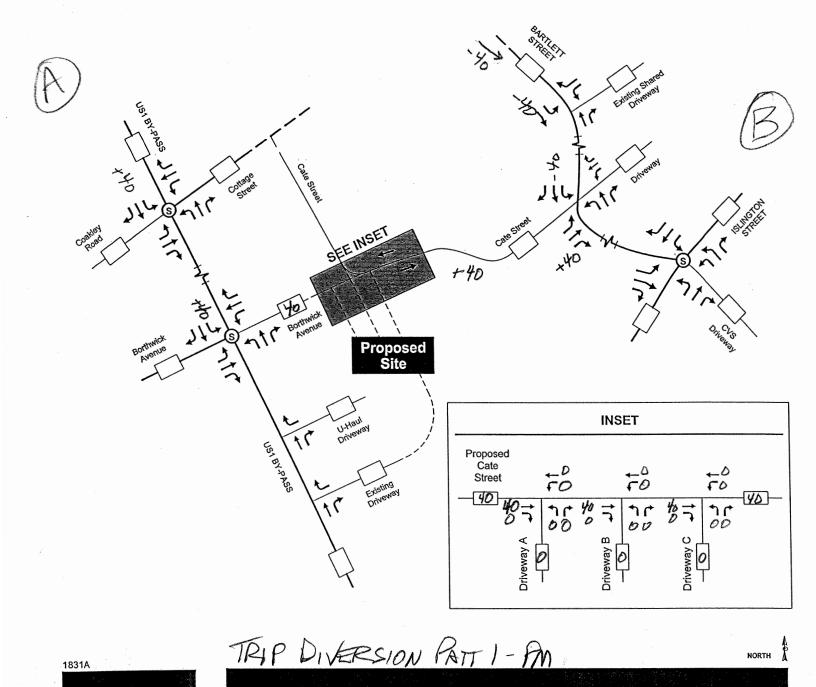


Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

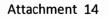
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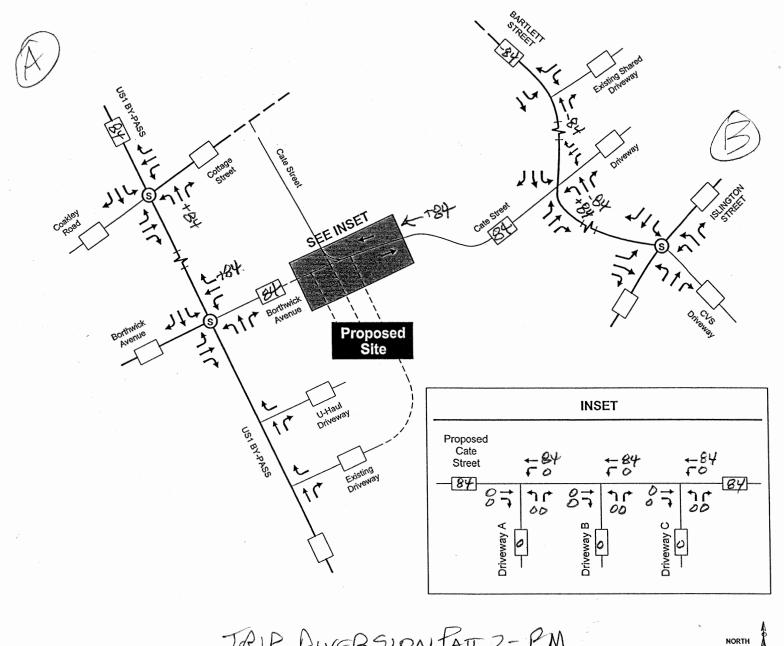




Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire





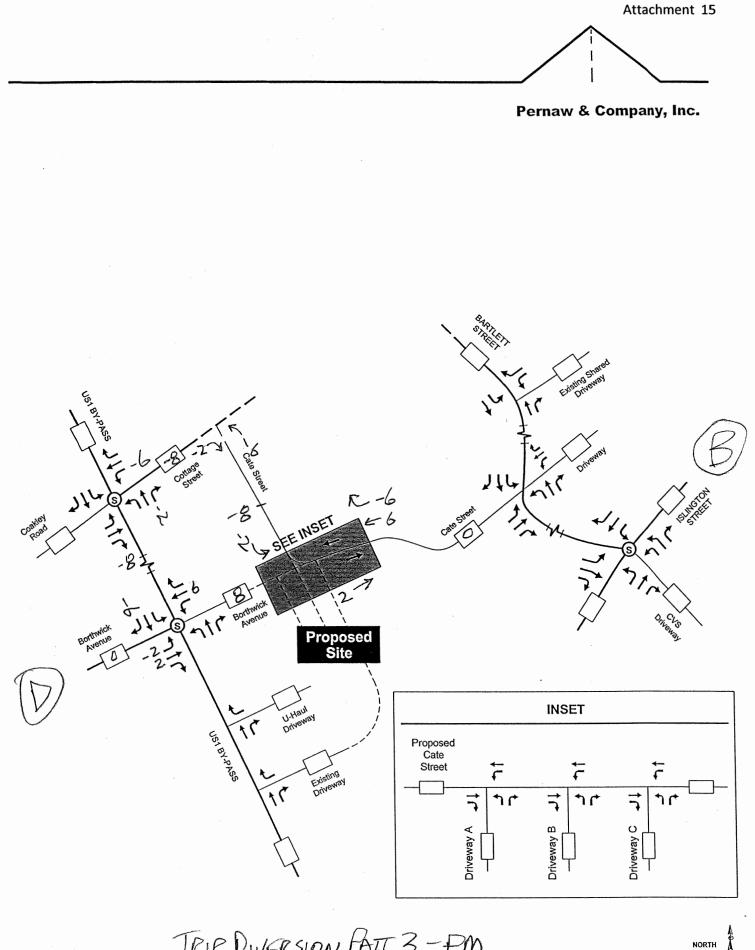


TRIP DIVERSION PATT 2- PM

NORTH

1831A

Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



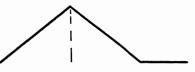
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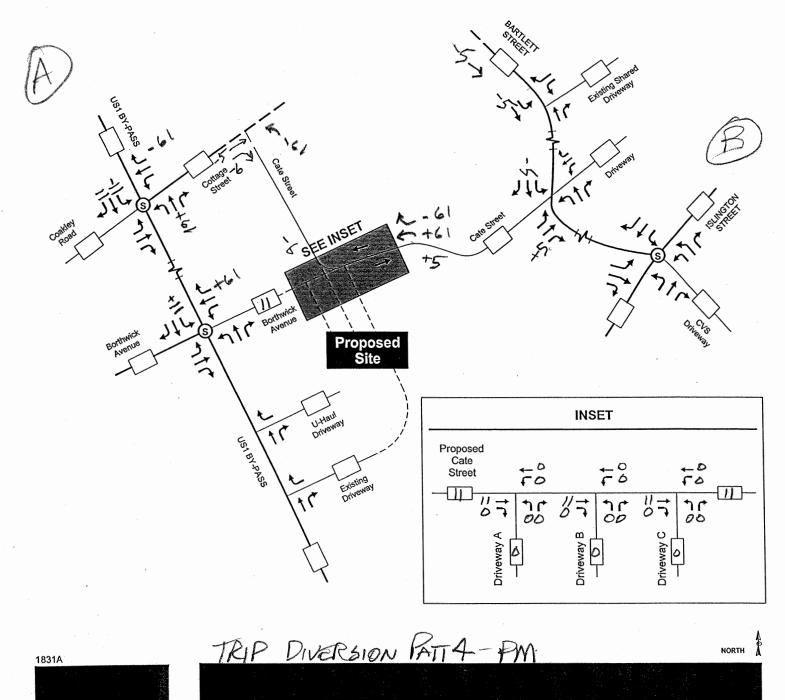
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Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

NORTH

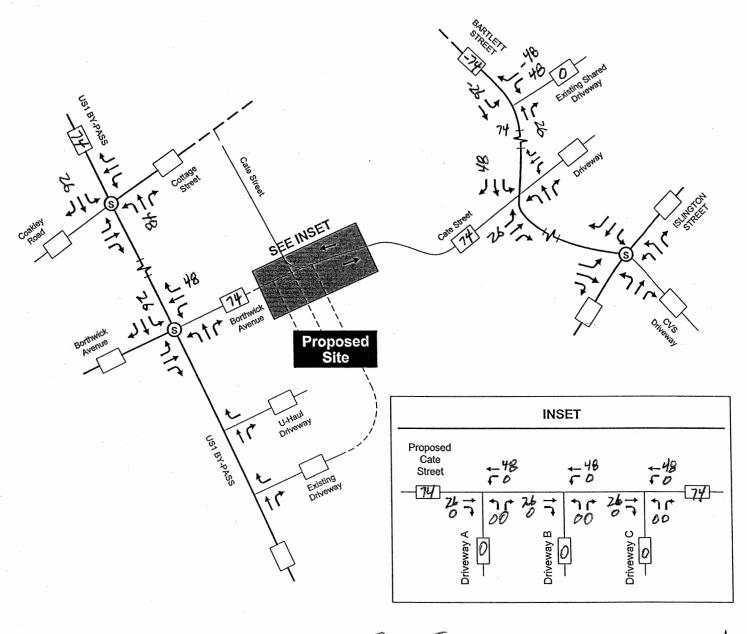






Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

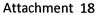


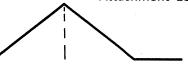


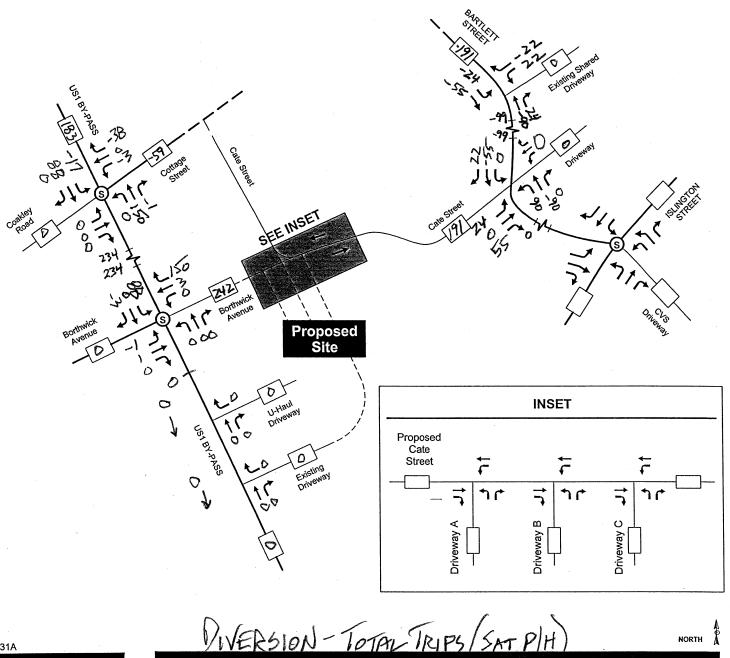
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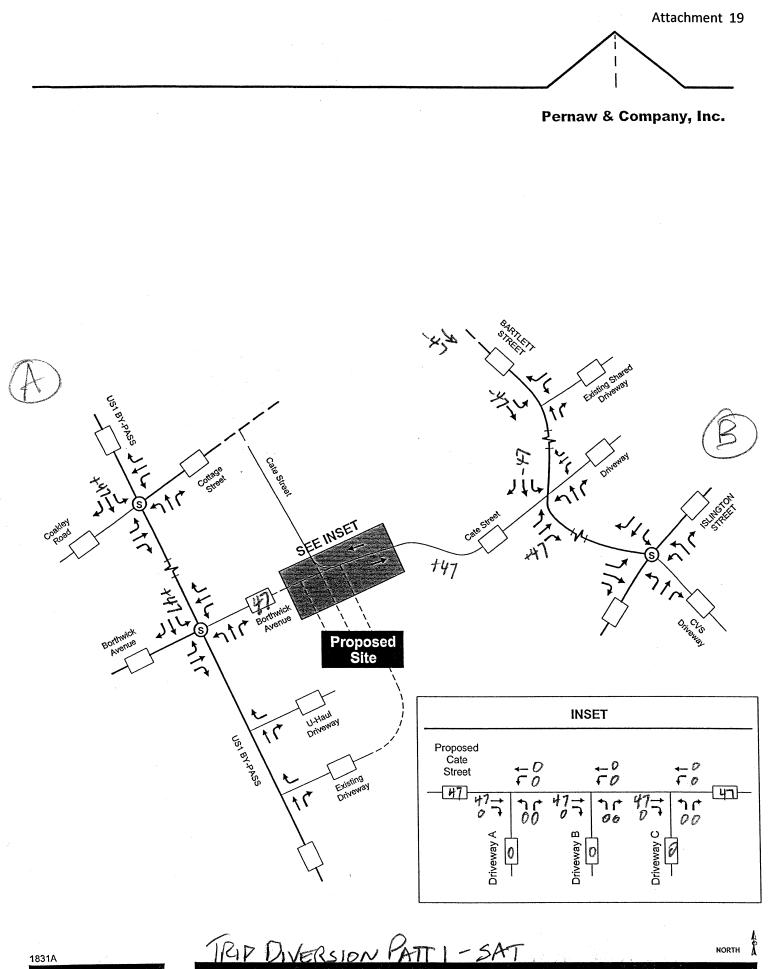




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Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

F54

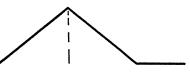


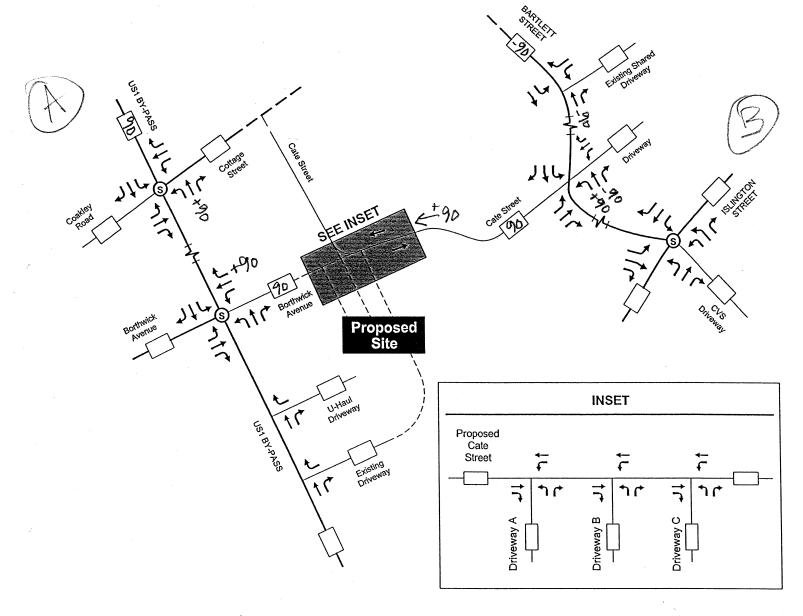
Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

1831A

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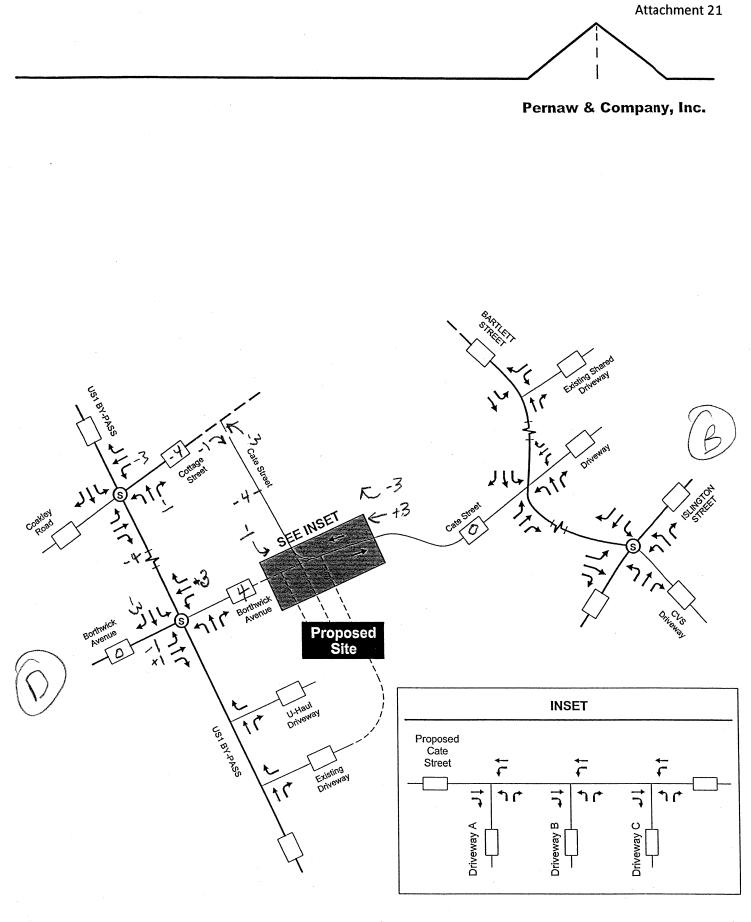




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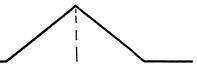
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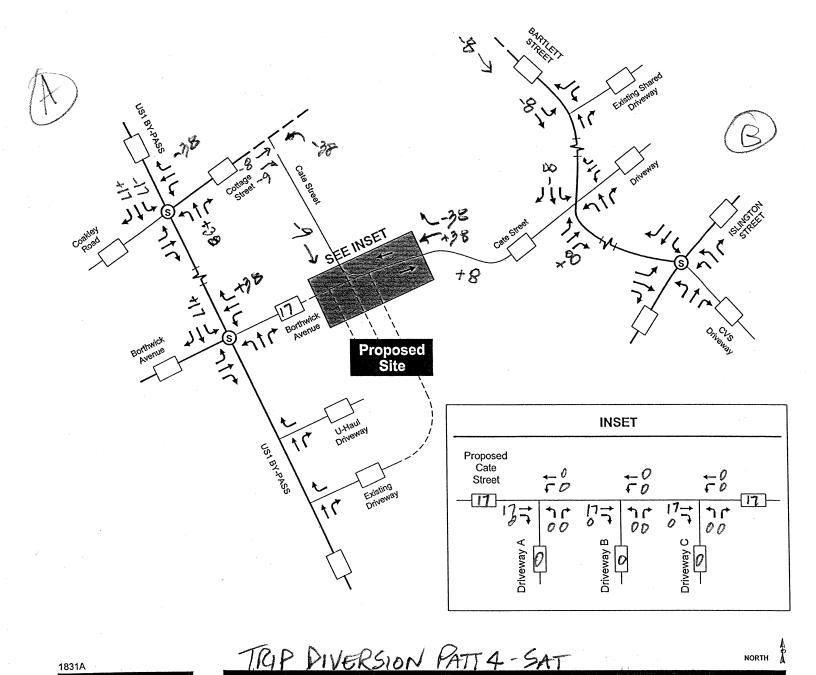
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Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire







Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire

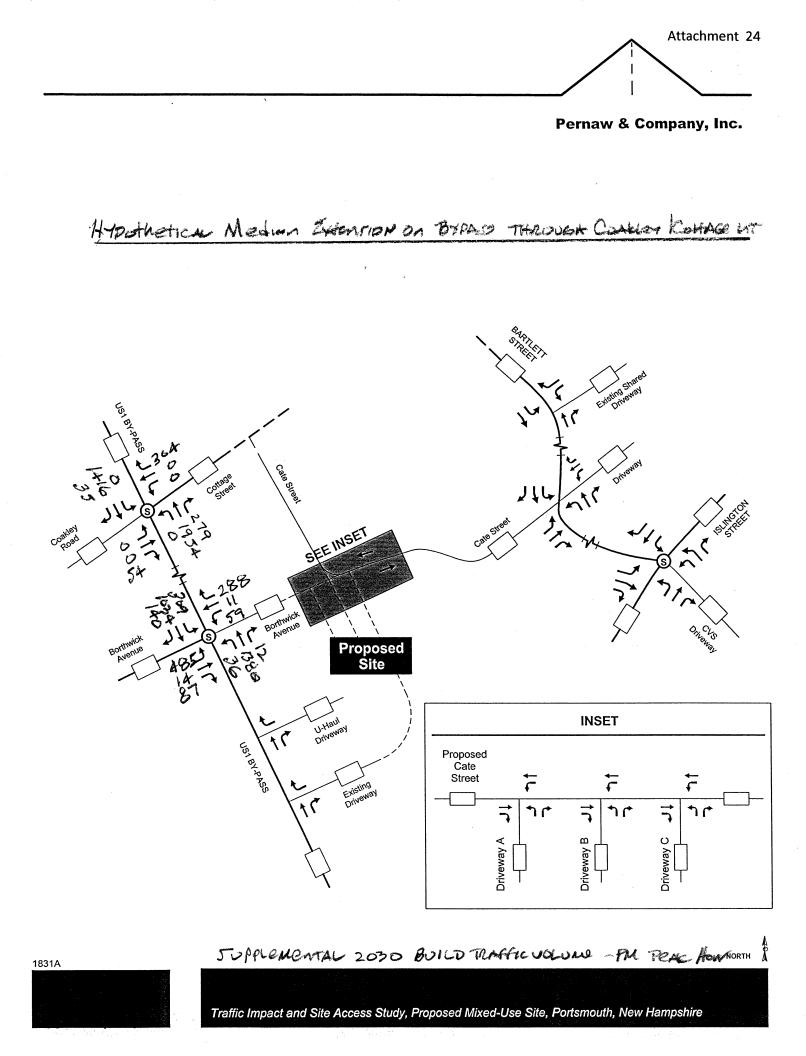
Attachment 23 Pernaw & Company, Inc. USABY 4 Śĸ 31 1 ( J 11 EE INSET 区 46 ntr Borthwick CL<sub>S</sub> Jeway Proposed Site INSET US1 BY PASS 11 Proposed Cate Street 22 46 YG 15 247 24 0 1 r 00 24 ጎ ሰ ጎ ሰ 00 00 Driveway B Driveway C Driveway A Ô ٥

TRIP DIVERSION PATT 5- SAT

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Traffic Impact and Site Access Study, Proposed Mixed-Use Site, Portsmouth, New Hampshire



ephen G. Pernaw & Company, Inc.
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Stephen

Signal-Controlled Intersection Capacity Analysis Summary - Hypothetical Case

US1 Bypass / Borthwick Avenue / Cate Street Extension

Attachment

		CASE A	ЕA			CASE B	В Ш			CAS	CASE C	
	20	2030 Build w/Mitigation	/Mitigat	ion	2030	2030 Build w/ Median at #1	Median	at #1	2030 E	2030 Build w/ Median & Lanes	ledian 8	Lanes
	V/C <sup>1)</sup>	Delay <sup>2)</sup>	LOS <sup>3)</sup>	Queue <u>Avg/95<sup>th 4)</sup></u>	<u>V/C <sup>1)</sup></u>	<u>Delay <sup>2)</sup></u>	LOS <sup>3)</sup>	Queue Avg/95 <sup>th 4)</sup>	<u>V/C <sup>1)</sup></u>	Delay <sup>2)</sup>	LOS <sup>3)</sup>	Queue Avg/95 <sup>th 4)</sup>
2030 Weekday PM Peak Hour												
Borthwick Avenue - EB LT	0.92	76.9	ш	10 (15)	1.02	109.8	ш	10 (15)	0.91	74.5	ши	9 (14)
Borthwick Avenue - EB LT&TH Borthwick Avenue - EB RT	0.93	78.8 41.4	шО	(c1) 01 (0) 0	0.07	44.2	- □	(0) (0) 0	0.07	41.3		0 (1)
Cate Street Extension - WB LT&TH&RT Cate Street Extension - WB RT	0.95 0.16	110.0 51.5	шO	5 (12) 0 (3)	0.98 0.13	121.0 56.6	ш О	5 (12) 0 (3)	0.84 0.48	80.3 53.9	шD	5 (11) 2 (6)
US1 Bypass - NB LT US1 Bypass - NB 2TH&RT	0.51 0.93	61.7 43.6	шО	1 (3) 22 (28)	0.52 0.98	64.3 53.0	шО	1 (3) 23 (30)	0.51 0.89	62.6 36.8	шО	1 (3) 21 (27)
US1 Bypass - SB LT US1 Bypass - SB 2TH&RT	0.94 0.65	88.1 18.8	ш	6 (11) 11 (18)	1.03 0.62	107.7 18.9	шВ	10 (18) 13 (16)	0.95 0.67	90.4 22.5	чU	5 (9) 15 (18)
Overall	0.97	47.4	۵		1.02	58.8	ш		0.92	45.7	۵	
Cycle Length	120.0				120.0			-	120.0			

1) Volume-to-capacity ratio, 2) Delay in vehicles per seconds, 3) Level of Service, 4) Queue length in vehicles

I

CASE A: Previously proposed mitigiation for Build Case - See Table 6 in original report CASE B: Same as Case A with hypothetical median at Cottage & Coakly CASE C: Same as Case B with widening to provide two left-turn lanes on the US1 Bypass southbound approach

Note: The traffic projections used for this hypothetical case (sensativity analysis) are based on a manual re-routing of the prohibited trips at the Cottage-Coakley intersection; further study is needed to determine is the hypotetical median extension would alter other travel patterns in the study area.

# HCM Signalized Intersection Capacity Analysis 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

	≯		$\mathbf{i}$	4	←	*	•	†	*	1	Ŧ	~
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	đ	۴		4	7	ሻ	<b>ሶ</b> ቡ		ኻ	<b>ት</b> ፞፞፞፝	
Traffic Volume (vph)	485	14	87	59	11	288	36	1380	12	309	1034	140
Future Volume (vph)	485	14	87	59	11	288	36	1380	12	309	1034	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0		4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00		0.95	0.95	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85		0.91	0.85	1.00	1.00		1.00	0.98	
Fit Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1708	1615		1612	1534	1752	3496		1752	3502	
Flt Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1708	1615	•	1612	1534	1752	3496		1752	3502	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	584	17	105	66	12	320	37	1423	12	322	1077	146
RTOR Reduction (vph)	0	0	89	0	48	179	0	1	0	0	8	0
Lane Group Flow (vph)	298	303	16	0	155	16	37	1434	0	322	1215	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases						8		******				*******
Actuated Green, G (s)	19.0	19.0	19.0		10.0	10.0	3.0	49.4		20.0	66.4	
Effective Green, g (s)	21.0	21.0	19.0	0.45940.45943940.940	12.0	10.0	5.0	51.4		22.0	68.4	*******
Actuated g/C Ratio	0.17	0.17	0.16		0.10	0.08	0.04	0.42		0.18	0.56	
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	291	293	250		158	125	71	1468		314	1957	
v/s Ratio Prot	0.18	c0.18	0.01		c0.10		0.02	c0.41		c0.18	0.35	
v/s Ratio Perm		CARDON THE CONTRACTOR	~~~~~		1999 - 1999 -	0.01	en e					
v/c Ratio	1.02	1.03	0.07		0.98	0.13	0.52	0.98		1.03	0.62	
Uniform Delay, d1	50.7	50.7	44.1		55.1	52.2	57.5	34.9		50.2	18.2	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	59.1	61.7	0.1		65.9	0.5	6.7	18.1		57.5	0.6	****
Delay (s)	109.8	112.4	44.2		121.0	52.6	64.3	53.0		107.7	18.9	
Level of Service	F	F	D	********************	F	D	E	D	********************	F	В	
Approach Delay (s)		101.2			87.5			53.3			37.4	
Approach LOS		F			F			D			D	0.509.999.009.009.009
Intersection Summary												
HCM 2000 Control Delay			58.8	H	CM 2000	Level of	Service		Е			
HCM 2000 Volume to Capac	city ratio		1.02									
Actuated Cycle Length (s)			122.4	Su	um of los	t time (s)			18.0			
Intersection Capacity Utilizat	tion		86.1%			of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

## Timings 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

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Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations	ሻ	र्स	*	ŵ	7	ሻ	<u>4</u> î>	ሻ	<u></u>	
Traffic Volume (vph)	485	14	87	11	288	36	1380	309	1034	
Future Volume (vph)	485	14	87	11	288	36	1380	309	1034	
Turn Type	Split	NA	Prot	NA	Perm	Prot	NA	Prot	NA	
Protected Phases	7	7	7	8		5	2	1	6	nan na mana na mangangan na mangangan na mangan kapatan kapatan kapatan kapatan kapatan kapatan kapatan kapatan
Permitted Phases					8					
Detector Phase	7	7	7	8	8	5	2	1	6	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0	
Total Split (s)	25.0	25.0	25.0	16.0	16.0	11.0	53.0	26.0	68.0	
Total Split (%)	20.8%	20.8%	20.8%	13.3%	13.3%	9.2%	44.2%	21.7%	56.7%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	None	Min	
Act Effct Green (s)	21.0	21.0	19.0	12.0	10.0	7.0	49.0	22.0	68.4	
Actuated g/C Ratio	0.18	0.18	0.16	0.10	0.08	0.06	0.41	0.18	0.57	
v/c Ratio	1.00	1.02	0.25	0.97	0.64	0.36	1.00	1.00	0.61	
Control Delay	102.9	105.7	1.5	95.5	17.3	64.7	60.7	100.3	19.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	102.9	105.7	1.5	95.5	17.3	64.7	60.7	100.3	19.1	
LOS	F	F	А	F	В	E	E	F	В	
Approach Delay		89.0		57.2			60.8		36.1	
Approach LOS		F		E			E		D	
Intersection Summary										
Cycle Length: 120										
Actuated Cycle Length: 120										
Natural Cycle: 120									1.19	
Control Type: Actuated-Unco	ordinated									
Maximum v/c Ratio: 1.02										
Intersection Signal Delay: 56	.0			In	tersectior	n LOS: E				
Intersection Capacity Utilizati Analysis Period (min) 15	ion 86.1%			1(	CU Level (	of Service	εE			
Splits and Phases: 2: US1	Bypass &	Borthwid	k Avenue	e/Cate Str	eet Exten	sion				
▶ <sub>Ø1</sub>	<b>†</b> ø:						-	<b>4</b> 07		<b>₹</b> 28
36.6	57.0						000	e		12

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26 s	53 s	255	16 \$
<b>↑</b> ø5 ↓ø6			
11s 68s			

Stephen G. Pernaw & Company, Inc.

## Queues 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

	≯	-	$\mathbf{i}$	←	•	•	t	×	Ļ	
Lane Group	EBL	EBT	ÈBR	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Group Flow (vph)	298	303	105	203	195	37	1435	322	1223	
v/c Ratio	1.00	1.02	0.25	0.97	0.64	0.36	1.00	1.00	0.61	
Control Delay	102.9	105.7	1.5	95.5	17.3	64.7	60.7	100.3	19.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	102.9	105.7	1.5	95.5	17.3	64.7	60.7	100.3	19.1	
Queue Length 50th (ft)	~246	~254	0	125	0	28	~583	~253	337	
Queue Length 95th (ft)	#387	#394	0	#289	77	65	#752	#444	411	
Internal Link Dist (ft)		916		388			250		304	and the second
Turn Bay Length (ft)	225	7.C.2006 2764079662 2622.5427442764	225	and a concerned on the spectrum		200		150		
Base Capacity (vph)	297	298	416	209	306	102	1428	321	2004	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	and the second
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.00	1.02	0.25	0.97	0.64	0.36	1.00	1.00	0.61	

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

# HCM Signalized Intersection Capacity Analysis 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

	. 🗡	-+	$\mathbf{r}$	∢	←	*	1	1	1	1	Ļ	∢_
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ	ર્વ	7		ф.	7	ሻ	朴诤		ኻኻ	<b>≜</b> ∱	
Traffic Volume (vph)	485	14	87	59	11	288	36	1380	12	309	1034	140
Future Volume (vph)	485	14	87	59	11	288	36	1380	12	309	1034	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0		4.0	6.0	4.0	4.0		4.0	4.0	(140999999997)
Lane Util. Factor	0.95	0.95	1.00		0.95	0.95	1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85		0.91	0.85	1.00	1.00		1.00	0.98	eardersteres este
Fit Protected	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1698	1708	1615		1612	1534	1752	3496	900001001100110011001200110	3400	3502	2077-2027-2027-2002-200-200-
Fit Permitted	0.95	0.95	1.00		0.98	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1698	1708	1615		1612	1534	1752	3496		3400	3502	
Peak-hour factor, PHF	0.83	0.83	0.83	0.90	0.90	0.90	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	584	17	105	66	12	320	37	1423	12	322	1077	146
RTOR Reduction (vph)	0	0	86	0	48	123	0	1	0	0	8	0
Lane Group Flow (vph)	298	303	19	0	155	72	37	1434	0	322	1215	0
Heavy Vehicles (%)	1%	0%	0%	0%	0%	0%	3%	3%	17%	3%	1%	3%
Turn Type	Split	NA	Prot	Split	NA	Perm	Prot	NA		Prot	NA	
Protected Phases	7	7	7	8	8		5	2		1	6	
Permitted Phases						8						
Actuated Green, G (s)	21.4	21.4	21.4		11.8	11.8	3.0	53.3		10.0	60.3	
Effective Green, g (s)	23.4	23.4	21.4		13.8	11.8	5.0	55.3		12.0	62.3	
Actuated g/C Ratio	0.19	0.19	0.18		0.11	0.10	0.04	0.46		0.10	0.52	
Clearance Time (s)	6.0	6.0	6.0		6.0	6.0	6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	329	331	286		184	150	72	1604		338	1810	
v/s Ratio Prot	0.18	c0.18	0.01		c0.10		0.02	c0.41		c0.09	0.35	
v/s Ratio Perm						0.05						
v/c Ratio	0.91	0.92	0.07		0.84	0.48	0.51	0.89		0.95	0.67	
Uniform Delay, d1	47.5	47.6	41.2		52.3	51.5	56.6	29.9		54.0	21.5	
Progression Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	27.0	28.7	0.1		28.0	2.4	6.1	6.8		36.4	1.0	
Delay (s)	74.5	76.3	41.3		80.3	53.9	62.6	36.8		90.4	22.5	
Level of Service	E	E	D		F	D	E	D		F	С	
Approach Delay (s)		70.3			67.4			37.4			36.7	
Approach LOS		E			E			D			D	
Intersection Summary												
HCM 2000 Control Delay			45.7	H	CM 2000	Level of	Service		D			
HCM 2000 Volume to Capac	ity ratio		0.92									
Actuated Cycle Length (s)	the and been to the set of the set		120.5		um of los				18.0			
Intersection Capacity Utilizat	ion		77.8%	IC	U Level o	of Service	Î.		D			
Analysis Period (min)		charge large a same	15	0.002.002.002.000	5 10 19 Con 10 Con 1				n mentanya katalah			NUMBER OF STREET
c Critical Lane Group												

# Timings 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

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Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	
Lane Configurations	ሻ	4	7	4>	7	ሻ	<b>ት</b> ፞፞፞	ኻኻ	<u></u> ተቡ	
Traffic Volume (vph)	485	14	87	11	288	36	1380	309	1034	
Future Volume (vph)	485	14	87	11	288	36	1380	309	1034	200 200 - "California - California - Califor
Turn Type	Split	NA	Prot	NA	Perm	Prot	NA	Prot	NA	
Protected Phases	7	7	7	8	- 74 - 75 - 76 - 76 - 76 - 76 - 76 - 76 - 76	5	2	1	6	
Permitted Phases					8					
Detector Phase	7	7	7	8	8	5	2	1	6	
Switch Phase										
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	11.0	11.0	11.0	11.0	11.0	11.0	16.0	11.0	16.0	
Total Split (s)	28.0	28.0	28.0	18.0	18.0	11.0	58.0	16.0	63.0	
Total Split (%)	23.3%	23.3%	23.3%	15.0%	15.0%	9.2%	48.3%	13.3%	52.5%	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	-2.0	-2.0	0.0	-2.0	0.0	-2.0	-2.0	-2.0	-2.0	
Total Lost Time (s)	4.0	4.0	6.0	4.0	6.0	4.0	4.0	4.0	4.0	
Lead/Lag	Lead	Lead	Lead	Lag	Lag	Lead	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	None	None	None	None	None	Min	None	Min	
Act Effct Green (s)	23.4	23.4	21.4	13.8	11.8	7.0	52.8	12.0	62.3	
Actuated g/C Ratio	0.20	0.20	0.18	0.12	0.10	0.06	0.45	0.10	0.53	
v/c Ratio	0.89	0.90	0.26	0.86	0.71	0.36	0.92	0.93	0.66	
Control Delay	74.1	75.5	4.8	70.3	32.6	64.3	41.1	87.0	23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	74.1	75.5	4.8	70.3	32.6	64.3	41.1	87.0	23.0	
LOS	E	E	A	E	С	Е	D	F	C	
Approach Delay		64.4		51.8			41.7		36.3	
Approach LOS		E		D			D		D	
Intersection Summary										
Cycle Length: 120	Marca	<u>Verne</u>	Annos	Encola de la constance	direct contract of the second	Personal and a second sec	Receited			
Actuated Cycle Length: 118	2020 - COREAN - CONTRACTOR - CONT	1999-1999-1997-1997-1997-1997-1997-1997		NOT THE DECOMPOSITION OF THE SECOND		Difference	99799999999999999999999999999999999999	801202020202000000000000000000000000000		
Natural Cycle: 90										
Control Type: Actuated-Unc	oordinated	83882×13×14×14	2020/00/00/00/00/00/00/00/00/00/00/00/00	R090089201201201		201105000000000000000000000000000000000	10000000000000000000000000000000000000	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -		
Maximum v/c Ratio: 0.93										
Intersection Signal Delay: 44	4.6		15.0000000		itersectior		104006/142.00- Jack	10.0000 mm	1005-000er-com-	
Intersection Capacity Utiliza				IC	CU Level o	of Service	) D			
Analysis Period (min) 15	900-00 2 April	201943.b				100-100-100-100-100-100-100-100-100-100	Carran ann an 1		#Enkerran	Sector Algorithm a strager during a stra
Splits and Phases: 2: US	1 Bypass &	Rorthwic	•k Avenue	Cate Str	eet Exten	noion				
		Dorum	Arvona			51011	•			
▶ <u>Ø1</u> <b>T</b> Ø2							<b>↓</b> € Ø7	•		708
16 s 58 s							28 s			18 5
<u>}Ø5</u> ♥ Ø6										

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#### Queues 2: US1 Bypass & Borthwick Avenue/Cate Street Extension

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Lane Group	EBL	EBT	EBR	WBT	WBR	NBL	NBT	SBL	SBT	and a second at the second
Lane Group Flow (vph)	298	303	105	203	195	37	1435	322	1223	
v/c Ratio	0.89	0.90	0.26	0.86	0.71	0.36	0.92	0.93	0.66	
Control Delay	74.1	75.5	4.8	70.3	32.6	64.3	41.1	87.0	23.0	a na sena a sena mula con a non encontrol encontrol de la sena de la dela dela dela del de la dela de
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	and the second second
Total Delay	74.1	75.5	4.8	70.3	32.6	64.3	41.1	87.0	23.0	
Queue Length 50th (ft)	237	242	0	122	45	28	533	129	372	
Queue Length 95th (ft)	#351	#357	18	#265	#149	65	#664	#221	453	
Internal Link Dist (ft)		916		388			250		304	
Turn Bay Length (ft)	225		225			200		150		-
Base Capacity (vph)	345	347	412	238	278	104	1602	346	1856	
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	0.86	0.87	0.25	0.85	0.70	0.36	0.90	0.93	0.66	
		2747. S. S. S. S. S.		A State of the second second						

Intersection Summary

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

Queue shown is maximum after two cycles.

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Table 9A

#### STOP-Controlled Intersection Capacity Analysis - Revised 9/19/18 Bartlett Street / Cate Street / Parking Lot Driveway

		W	/eekday Pl	VI Peak Ho	ur		Saturday I	Peak Hour	
		Delay <sup>1</sup>	<u>V/C<sup>2</sup></u>	LOS <sup>3</sup>	Queue <sup>4</sup>	Delay <sup>1</sup>	V/C <sup>2</sup>	LOS <sup>3</sup>	Queue <sup>4</sup>
Bartlett Street	- NB Left Turns								
	2018 Existing	9.2	0.10	Α	<1	8.6	0.05	Α	<1
	2020 No Build	10.0	0.17	в	1	9.1	0.09	А	<1
	2020 Build	11.0	0.31	в	1	9.5	0.20	Α	1
	2030 No Build	10.5	0.19	в	1	9.3	0.10	А	<1
	2030 Build	11.7	0.34	в	2	9.9	0.22	Α	1
Cate Street -	EB Left-Through								
	2018 Existing	16.1	0.19	с	1	12.5	0.06	в	<1
	2020 No Build	86.6	0.08	F	<1	35.6	0.01	Е	<1
	2020 Build	>300.0	1.23	F	4	69.5	0.40	F	2
	2030 No Build	120.5	0.11	F	<1	43.4	0.01	Е	<1
	2030 Build	>300.0	1.88	F	5	99.3	0.51	F	2
Cate Street -	EB Right-Turns								
	2018 Existing	-	-	-	-	-	-	-	-
	2020 No Build	17.0	0.27	с	1	13.2	0.11	в	<1
	2020 Build	20.0	0.44	С	2	14.5	0.28	в	1
	2030 No Build	19.1	0.32	с	1	14.1	0.13	в	<1
	2030 Build	23.5	0.51	С	3	15.7	0.31	с	1
Parking Lot D	riveway - WB Left-Through-Rig	ht-Turns							
	2018 Existing	37.8	0.01	Е	<1	24.7	0.02	с	<1
	2020 No Build	68.3	0.02	F	<1	36.9	0.03	Е	<1
	2020 Build	114.4	0.03	F	<1	56.4	0.05	F	<1
	2030 No Build	95.2	0.03	F	<1	45.4	0.04	Е	<1
	2030 Build	169.3	0.05	F	<1	72.9	0.07	F	<1
Bartlett Stree	t - SB Left-Turns								
	2018 Existing	8.7	0.00	А	<1	8.2	0.00	А	<1
	2020 No Build	9.1	0.00	А	<1	8.5	0.00	Α	<1
	2020 Build	8.8	0.00	А	<1	8.2	0.00	Α	<1
	2030 No Build	9.4	0.00	А	<1	8.6	0.00	A	<1
	2030 Build	9.0	0.00	А	<1	8.3	0.00	А	<1

<sup>1</sup> HCM Control Delay (seconds per vehicle), <sup>2</sup> HCM Volume to Capacity Ratio, <sup>3</sup> HCM Level of Service, <sup>4</sup> HCM 95th Percentile Queue (vehicles)

Intersection Int Delay, s/veh 2.1

Movement	EBL	EBT	EBR	WBL.	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations		fi.	7		4			<b>4</b> >		570	4		ø	and the second se		
Traffic Vol, veh/h	3	V ò	86	10	1 شمی	0	121	622	<b>~</b> 0	1	<b>≁</b> 673	13	V			an de la composition Composition
Future Vol, veh/h	3	0	86	0	1	0	121	622	0	1	673	13	979924.0 S + - 7	·		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	69 981 19119 I	90696763 You Y		n nahara tah
RT Channelized	in a star		None			None	÷	<ul> <li>Name of a second se second second sec</li></ul>	None			None				
Storage Length	-	en 10 1333 (1994) -	250	-	- 			een contrates -	neenseers -	-			60.349944.245.24 <sup>-</sup>	o ton renamen	G 199471-CORDATA - 1	laddet in geni
Veh in Median Storage	,# -	0	-	- -	0			0			0	-				
Grade, %	-	0		9737734154994472* <b>-</b>	0		2940249 (CTRANCAT) -	0	-	-1.109867-20931	0	-		, en	9 <b>2012 - 9</b> 1247 The TREE 2014 (	999982-53-6
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91				
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9	04906366584534	27022992999929	0.0000000000000000000000000000000000000	9523334, 6,2
Mymt Flow	4	0	113	0	1	. 0	146	749	0	1	740	14				
	17. MK. (13.415.445.541	anderset samente	41277797127796072	67589 <b>6790996</b> 8768		erteritattarilari	na arang kang banga	*::-:::::::::::::::::::::::::::::::::::	tonintin derbed	1993) (1993) 1993) (1993)	n ar hear chaire an	9892498998898999 1	12 998 (L. 1998) 1			2017947 P.H.194
Major/Minor	Minor2		1	Minor1			Major1			Major2						
Conflicting Flow All	1791	1790	747	1847	1797	749	754	0	0	749	0	0				
Stage 1	749	749	171	1041	1041	140		U		140						
Stage 2	1042	1041	-	806	756	-	98.89993 -	29997999 -	83999 <b>9</b> 90 -		-			10194540258		
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	<u></u>		4.1	<u>.</u>					
Critical Hdwy Stg 1	6.1	5.5	9-8 <b>9-9-</b> 8	6.1	5.5		2003-01-3 -	-								2019/0998
Critical Hdwy Stg 2	6.1	5.5	- -	6.1	5.5				1994 <u>-</u>							
Follow-up Hdwy	3.5	1 141 141. 41 34 34 12 12 12	3.318	3.5	4	3.3	2.2		678883999 -	2.2				ST MEGUELS.		
Pot Cap-1 Maneuver	63	82	413	58	81	415	865		<u>.</u>	869						
Stage 1	407	422	-	280	310	6.999 <b>/99</b> /	_		-				0000000			93433349
Stage 2	280	310	<u>_</u>	379	419				66.00 <u>6</u>							
Platoon blocked, %	- cov			U.U.			***********	-	-		-	-				4943237D,
Mov Cap-1 Maneuver	48	58	413	33	58	415	865			869		<u> </u>				
Mov Cap-2 Maneuver	48	58	-	33	58			-	-			-	00000000	9892.83 <b>8</b> 88		981/1399.
Stage 1	289	421	-	199	220		_					-				
Stage 2	198	220	-	275	418	-	<i>ename</i> a -		-				CARCER D			
Oldgo L	100			210												
Approach	EB			WB			NB			SB						
HCM Control Delay, s	eroenceeer veenceshood			68.3			1.6			C	1					
HCM LOS	С	CARDON CARDON	Same and the second second	F		and the search		anta-manaan		andreasted	0		NORSON DAMAGEN		Sector Contractor	kelanakhat dan:
Minor Lane/Major Mvn	nt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR						
Capacity (veh/h)	and all all the	865	Incomposition of the second		48	Contraction of the second second second	A CONTRACTOR OF CONTRACTOR	869	and the second second second				a canada a c			
HCM Lane V/C Ratio		0.169	SAND ON THE SUIDING IN	- 1000000000000000000000000000000000000	0.082	1. 12 W. S. Martin	2.0000000000000000000000000000000000000	and a start and all	とてみ ひにくびき ひりょうやく		940 HAAAAA •	ene Marka I	CARACTOR OF CONTRACTOR OF C			
HCM Control Delay (s	1	10			86.6			9.1	A DESCRIPTION OF THE PARTY OF T							
HCM Lane LOS	1:::::::::::::::::::::::::::::::::::::	B			F	C	a na a shekara na kata kata kata kata kata kata kata	A	1990-1992 S 2007 AM 2000 AM 20	20100000000000000000000000000000000000	centra 4808833 -		ana		nessen verse der	MARKEN PAR
HCM 95th %tile Q(veh	1	0.6			0.3	the sheet of the state of the state of the		0	ben konnen net stands and sam							
instructure of the	Mar Marine College			rena a com		KARE ARABAS			an shirida		649486043				ana ana ang ang ang ang ang ang ang ang	enemente

Intersection 12.4 Int Delay, s/veh EBL EBT EBR WBL NBT NBR SBT SBR Movement WBT WBR NBL SBL Lane Configurations 4 4> 0 219 628 🖌 63 143 538 0 Traffic Vol, veh/h 30 0 0 1 Future Vol. veh/h 30 0 143 0 1 0 219 538 0 628 63 1 0 0 0 Ó 0 0 0 0 0 0 Conflicting Peds, #/hr 0 0 Sign Control Stop Stop Stop Stop Stop Free Free Stop Free Free Free Free **RT** Channelized None None None None Storage Length 250 -. . . 0 0 Veh in Median Storage, # 0 . 0 -696 Grade. % 0 0 0 0 \_ \_ \_ Peak Hour Factor 90 91 91 76 76 76 90 90 83 83 83 91 Heavy Vehicles, % 0 2 0 0 0 0 2 0 1 9 0 0 Mymt Flow 39 0 188 0 1 0 264 648 0 1 690 69 Major/Minor Minor2 Major1 Major2 Minor1 **Conflicting Flow All** 1903 725 1997 1937 648 759 0 0 0 0 1904 648 Stage 1 727 727 . 1176 1176 . -4 Stage 2 1177 1176 821 761 --\_ -Critical Hdwy 6.5 6.5 6.2 4.1 4.1 7.1 6.22 7.1 4 Critical Hdwy Stg 1 6.1 5.5 6.1 5.5 --\_ \_ . \_ \_ Critical Hdwy Stg 2 5.5 5.5 100 6.1 6.1 Follow-up Hdwy 3.5 4 3.318 3.5 4 3.3 2.2 2.2 \_ -. • -947 Pot Cap-1 Maneuver 53 70 425 45 66 474 862 . Stage 1 432 235 267 419 ---\_ Stage 2 235 267 371 417 ÷ Platoon blocked, % ----Mov Cap-1 Maneuver ~ 32 36 425 -16 34 474 862 4 947 Mov Cap-2 Maneuver ~ 32 36 16 34 --218 Stage 1 431 122 139 4 11 Stage 2 121 139 -206 416 \_ \_ \_ -Approach ΕB NP WB 114.4 HCM Control Delay, s 90.3 3.2 HCM LOS F F Minor Lane/Major Mvmt NBL NBT NBR EBLn1 EBLn2WBLn1 SBR SBL SBT Capacity (veh/h) 862 32 425 947 34 0.306 - 1.234 0.443 0.033 0.001 HCM Lane V/C Ratio \_ \_ -HCM Control Delay (s) 11 0 -\$ 425.4 20 114.4 8.8 0 В F С F HCM Lane LOS А A А -HCM 95th %tile Q(veh) 1.3 2.2 4.3 0 0.1 Notes

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

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Intersection														at it			
Int Delay, s/veh	2.4																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR					
Lane Configurations		Ê	7	1	ţ.			<u></u>	-million	æ	4	đ	and the second	1			
Traffic Vol, veh/h	3	V 0 :	92 1	0	×1,	0	130 🗸	680	0	× 1.	738	14	Ø				
Future Vol, veh/h	3	0	92	0	1	0	130	680	0	1	738	14					
Conflicting Peds, #/hr	0	0	0	0	0	Q	0	0	. 0	0	0	0					
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	-5809.1 M	2. 1324 (2.1.): 13-13	oon aa saa	Analas varistas	21.3
RT Channelized		1. 199	None	1999 <b>- 1</b> 99		None	- 10 A	-	None			None					
Storage Length	- 1993:1993-1997	- 55000-0 <b>2</b> 00	250	- 101-13-1249-131	-	- Reconstant	- 1945-1921-194	- 2000/06/201	- 27202280868	- 	- 6600980 <b>4</b> 3	- 2.16.25.26.35	r Salat Sta	anta anta a	1452427 SPER		9,983
Veh in Median Storage	,# -	0	÷.	•	0	98 S. S.	() 	0			0	-					
Grade, %	- 70	0 76	-	- 90	0 90	- 90	- 83	0	-	- 91	0 91	- 91					200
Peak Hour Factor	76	NAME DE CONTRECTOR	76 2	90. 0	レットローレーション	90	83 0	83 2	83 0	NALL CONTRACTOR	91 1	91 9	6409171792412 <del>6</del> 231				
Heavy Vehicles, % Mvmt Flow	0	0 0	121	0	. 0	0	157	819	0	0 1	811	9 15	terrelation and feature and its literation		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		arian Benedi
NUTHEROW	H	U	121	v	1	v	101	013	U		011	10					
	r - 0							and the second second		1 : 0	and the second			and the local		1	
COST AND THE REPORT OF A DATA AND A	Minor2	1051	a Astrono Martine and Ante	Minor1	4004		Major1			Major2	<u> </u>	<u> </u>					
Conflicting Flow All	1955	1954 821	819	2014	1961	819	826	0	0	819	0	0		z sense sta			ann.
Stage 1	821 1134	821 1133		1133 881	1133 828				-	-	-	-		Compary			
Stage 2 Critical Hdwy	7.1	6.5	6.22	7,1	6.5	6.2	4.1	- NGN 1992	-	4.1	- 10101010	- 1988-899					
Critical Hdwy Stg 1	6.1	5.5	0.22	6.1	5.5	-0,2	- 1987 <b>-</b>			- H.L			9899883				
Critical Hdwy Stg 2	6.1	5.5		6.1	5.5		-			Cale She					and and a star	1910 A	
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	\$77522589 <b>-</b>	9278-5459-5683 -	2.2	-	-		423947349879			
Pot Cap-1 Maneuver	49	65	375	44	64	379	813	- -		818	-						
Stage 1	371	391		249	280	-	99099999999999999999999999 	-			•#19919299999972	-		506653745745745	14139114/17792555	1912-01922-024	9998399
Stage 2	249	280	-	344	389	4	-	-		-			2				
Platoon blocked, %		1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-						-	-		-		-				
Mov Cap-1 Maneuver	35	42	375	22	41	379	813	-		818	-				are e		
Mov Cap-2 Maneuver	35	42	-	22	41	-	-	-	-	-	-		-	9403-5505-504	201500504534534534534	Maria	NET WATE
Stage 1	240	390	-	161	181		- -		-	-			-				
Stage 2	160	181	-	232	388	-	- 0.000/00/00	- 80.22.24	-	- 1999:1999:1999:1999:199	-	2010: 1994	- 1.000	in water			
Approach	EB			WB			NB			SB						1. A.	
HCM Control Delay, s	22.3			95.2			1.7			0							
HCM LOS	С	19.070000000000000	esonopro i - Artonico reto	F	tientiert erzen hierte	uningsture and the states	Pathon Antheric St.	WalderStoch-sche	tive the state of the second st	11111111111111111111111111111111111111	D. VELADARA GAN	2012-001-02-02-02-02-02-02-02-02-02-02-02-02-02-	an a		walater and a start	h-thinings-lactors-	24/cHRet
Minor Lane/Major Mvr	nt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR					and the second se		e 7
Capacity (veh/h)		813	-		35	101-101-1020-1040-204-101-104-101	41	818									
HCM Lane V/C Ratio	0.9999.9999	0.193	or ANNO NANANANANA	1999 - THE TREE -	CHERRY DEP BROOK	22.22.90340227214900	0.027	0.001	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	45579748888898988 •		unter a Stadio	มะสาราช 25 ซิวัตร์	007-99334789973	นมสาราคมสาวังสารออกรังได้	nationa (1945)1925	9404973
HCM Control Delay (s	}	10.5	.0	- -	120.5	19.1	95.2	9.4	0								
HCM Lane LOS		В	A	staath card a nai Suarcuald	F		F	A	Contain containt contain			antiant office sector	erentite and	1249004904-01	AND	att unboarthet	27.50924.1
HCM 95th %tile Q(vel	1)	0.7	- -	-	0.3	1.4	0.1	0	-	Stript.			e de			der e	

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Intersection Int Delay, s/veh	19.2		a va													and some a straight
a and chair in a constant for the data set of a 1966 line for a constant of the set of the set of the set of the	EBL	EBT	EBR	WBL	WBT	MDD	NBL	NBT	NBR	SBL	SBT	SBR				- <b>1</b>
Movement	EDL		<u>, For</u>	VVDL	<u></u> दीभ	YVDA	INDL		חסאו		<u>्ठा</u> क्षे	opn,	1			-141
Lane Configurations Traffic Vol, veh/h	30 י	M O	149	0	The Carl State Hard In	é 0.	228	<b>4</b> 596 €	0.	1	<b>6</b> 93	64	lates			
Future Vol, veh/h	30	000	149	0.	1 <b>4</b>	0 . 0	228	596	0	1888-18 1	693	64			유한한한한한 것 같아요 	
Conflicting Peds, #/hr	0	Ő	0	Õ	0	Ü	0	0	0	0	0.00	0				1.000
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free		en an		
RT Channelized	otop 		None	- Ciop		None			None			None		(13 <b>4</b> 3)		ż.
Storage Length		1999-1997	250	-	-	-		- 100000		- -	-	45843775384OA -	087948636757	8880503.69283	- 	
Veh in Median Storage	,# -	0		4	0	2	$\sim 2^{-1}$	0	- 		0					
Grade, %	-	0		•	0	-		0	-	-	0	-				
Peak Hour Factor	76	76	76	90	90	90	83	83	83	91	91	91				AND REAL
Heavy Vehicles, %	0	0	2	0	0	0	0	2	0	0	1	9	n	124435-126482-196482-19	<	No.
Mvmt Flow	39	0	196	0	1	0	275	718	-0	1	762	70				
Major/Minor	Minor2 -			Minor1			Major1			Major2	and a					NAME OF
Conflicting Flow All	2068	2067	797	2165	2102	718	832	0	0	718	0	0				-
Stage 1	799	799	-	1268	1268	-		- 	-			•				
Stage 2	1269	1268	-	897	834	-	-	-	-	-	-	-				
Critical Hdwy	7.1	6.5	6.22	7.1	6.5	6.2	4.1	-		4,1						
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-		un manatura mitara	Second Bella Hander Der Die De	0.4
Critical Hdwy Stg 2	6.1	5.5		6.1	5,5		-		-	4		-				
Follow-up Hdwy	3.5	4	3.318	3.5	4	3.3	2.2	-	-	2.2	-	-				63
Pot Cap-1 Maneuver	40	55	387	34	52	432	809	-	-	892		•				
Stage 1	382	401	- 2003/07/02/0	209	242	- 101010212102	- 2012200000	- 27755-01233008	- 19. statesticalization	-	- 1999:03:01-03:02	- NAMARANALA	us an	a la martina de la composición de la co		GG E.
Stage 2	208	242	20 A 19	337	386	-		-	Part -	-	-	-				
Platoon blocked, %	<b>.</b>	61	007	•	00	100	000	-	-		- 2:2005:413	- 111111111111111111111111111111111111	S. S. C. S. C. S.			202.A. 1815
Mov Cap-1 Maneuver	~ 21	24	387	9	23	432	809	•		892	-					驟
Mov Cap-2 Maneuver	~ 21	24 400	- 	9 91	23 105	- 1944-9649	- 2011-101-10	- 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 - 1910 -	-	-	- 1949-1949	-				
Stage 1	89	400	-	166	385				-			-				æ
Stage 2	. 09	105	- 	100	303	-	-	-	-	- 640	-	-			Transfer Starts	
																ARC MARIE
Approach	EB			WB			NB			SB		1.1				
HCM Control Delay, s				169.3			3.2			0						
HCM LOS	F Baseline			F				6.8338.86		an a				1. 23 C. 10		38 (z
Minor Lane/Major Mvr	nt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR				(Sector)		
Capacity (veh/h)		809			21	387	23	892	-	-						
HCM Lane V/C Ratio	en en en andreaen confission	0.34			1.88	0.507	0.048	0.001	-						Arren arrent a	
HCM Control Delay (s	}	11.7	0	4	\$ 803.5	23.5	169.3	9	0, 1	-						
HCM Lane LOS	vitario, attactor	В		-	F	С	F	A	laan sudhervirius kitsebta	-	Seehaat Kinsha sine Laansk	el batta esta estrar a sino	1	10000000000000000000000000000000000000	2013 - 1010 - 101 - 100	1.2601.5
HCM 95th %tile Q(vel	n)	1.5			5.2	2.8	0.1	C	)							
Notes																
~: Volume exceeds ca	apacity	\$• D	elav ev	ceeds 3	800s	+: Con	nutatio	n Not F	Defined	*∙ ∆۱	Imaior	volume	in plato	on	and the second	
. TOIDING CACCODS OF	speciel	KON SALARIAN	oray on	000000		. ວິດໃນ	patado		Sound		inajor	- Siding	picito			1992). 1992)

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Intersection Int Delay, s/veh 1.3

Movement	EBL	EBŤ	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			10
Lane Configurations		Ą	۲		4	and the		/ \$	Mar.		4	and the	1		
Traffic Vol, veh/h	1	10	41	× 1 v	1	🖌 0 v	₹75₩	471∨	1	r 1	569	d 10			
Future Vol, veh/h	1	0	41	1	1	0	75	471	1	1	569	4			- 1990 - 1997 - 1993 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	Ö	0	0	0			and and a second se
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free			
RT Channelized			None			None			None			None			
Storage Length	-	-	250	-	-	-	-	-	-	-	-	-			
Veh in Median Storage,	# -	0	-	- -	0	i serie -	$(\alpha,\beta) \in \mathbb{R}^{n}$	0	2	- 10 -	0	•			
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-			
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92			
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0			
Mvmt Flow	1	0	55	2	2	0	85	535	1	1	618	4			
Major/Minor N	Ainor2		) I	Ainor1		N	Aajor1		A	Najor2					
Conflicting Flow All	1329	1328	620	1356	1330	536	622	0	0	536	0	0			
Stage 1	622	622	-	706	706	4	-	-	20 10 2 1 <del>1</del>	-	-	÷			
Stage 2	707	706	-	650	624	-	-	-	-	-	-	-			
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4,1		-	4.1	-	and service			
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-			
Critical Hdwy Stg 2	6.1	5.5		6.1	5.5	<u>.</u>		12.14	-	-	-	-			
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	•	-	2.2	-	-			
Pot Cap-1 Maneuver	133	157	492	128	156	549	969	-	-	1042	÷	5 (s) <b>-</b>			
Stage 1	478	482	-	430	442	-	-	-	-	-	-	-			
Stage 2	429	442	-	461	481	- 19 <u>-</u>	-		e e	-	-				
Platoon blocked, %								-	-		-	-			
Mov Cap-1 Maneuver	119	137	492	103	136	549	969	-	-	1042	-				
Mov Cap-2 Maneuver	119	137	-	103	136	-	-	-	-	-	-	-			
Stage 1	418	482	-	376	387	- <i>1</i>		-	-	-	-	-			
Stage 2	373	387	-	409	481	-	-	-	-	-	-	-	on the fact that the fact that the		19 <b>92427123</b> -0768767773-1-0-713
Approach	EB			WB			NB			SB					
HCM Control Delay, s	13.7			36.9			1.2			0					
HCM LOS	В			Е											
Minor Lane/Major Mvn	nt	NBL	NBT	NBR	EBI n1	EBI n2\	WBLn1	SBI	SBT	SBR					
Capacity (veh/h)	<b></b>	969	1001	COLORA COMPLEXING COL	119	Consultation of the Submittee of the	WARE OVER TRANSPORTED	1042	100		a contraction		<u>Carloration (a c</u>		
HCM Lane V/C Ratio		0.088	-	20 C	1. M. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	Contraction Decart	0.034		9492007 <b>7</b> 0 _	10401818 <mark>5</mark> -		na ann an 1980. Iomraidh an 1980		CHARLEN AND	
HCM Control Delay (s)		9,1	- 0	ward with a thread with a	35.6	13.2		8.5	- 0	- 199092					
HCM Lane LOS		0.1 A	0 A	1999-1997 -	00.0 E	10.2 B	50.5 E	0.0 A	0 A	-	THE SEA				
HCM 95th %tile Q(veh	1	0.3	ane and	- 10:32	0	and a second	0.1	Ô		-					
TOW CONTINUE OF YOU	A. C. S. C. S.	<b></b>		maren an districtura di seconda d Seconda di seconda di se		S. Stat	989 (S		an serie de la companya de la compan La companya de la comp	NA TATANÀ AN				n se	

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Intersection Int Delay, s/veh 4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				R
Lane Configurations		A	7	đi.	¢ĵ.	i'r	تتد	A.	11	£	44	in the second	1			
Traffic Vol, veh/h	27	V 01	109	1	1.	₩ 04	179		🖉 1 🗸	( 1 i	•514 v	11日本でありたりを見たするからうか。				
Future Vol, veh/h	27	0	109	1	1	0	179	381	1	1	514	28	and a start of the	ing menals and		
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0 -	0	0				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	ionormana) -	90009 <b>4</b> 50008830	and and a state of the state of t	
RT Channelized	-		None		50 S	None	- 		None	-	-	None				
Storage Length	-	-	250	- 	-	-	-	- 	-	- 1910-2028-990	-	-	ner and a		ETERSENSE (* 1875)	165.
Veh in Median Storage	,# -	0		-	0.	e e		0	4	2	0	4				
Grade, %	- 104036040245	0	-	-	0	- 1991-1992-199	- 	0	- 	-	0	-	MESTROM			
Peak Hour Factor	75	75	75	50	50	50	88	88	88	92	92	92				
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	1	0	1995 - 1996 A			
Mvmt Flow	36	0	145	2	2	0	203	433	1	1	559	30				题
,																w
Major/Minor	Minor2			Minor1		monore and an on your	Major1		THE REPORT OF TH	Major2						
Conflicting Flow All	1417	1416	574	1489	1431	434	589	0	0	434	0	0	Saturda de Sicurio N	esterio atesta da bicita	tent initianita villa stantination	anta.
Stage 1	576	576		840	840	4	÷	-	-	-		-				
Stage 2	841	840	-	649	591	-	-	-	-	eris estivitieristellikeris	-		0/26-27-229/5296	- MARINA MARINA	ae it waaroo iterioo tabiisha	0.49 <b>0</b> .
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	<u>-</u>	•	4.1	-			1.1.1.2.14		
Critical Hdwy Stg 1	6.1	5.5		6.1	5.5	-	-	-	-	-	-	-	antan arana	REPORTED THE	NO. IN PROPERTIES AND THE	tali s
Critical Hdwy Stg 2	6.1	5,5	•	Charles Contraction of the	5.5			-	-		-	÷.				
Follow-up Hdwy	3.5	4	.3.3	3.5	4	3.3	2.2	- 	-	2.2	-	-	hande destruction	Neterina anterio		ANA
Pot Cap-1 Maneuver	116	139	522	103	136	626	996	-		1136	4					麗
Stage 1	506	505	-	363	384	- 	- 0.8519800(1140)	elieskonkeransee	- 	-	- 	-		no de la com		iasio
Stage 2	362	384		462	498	-		-	4	Ŧ	-	-			an a	
Platoon blocked, %	NATURA MORE		HOLDHON DHON	VERSIONERED	200202-0202-020	100 Mar 100		- 	-	e anton en sen	-	-		the second second	Redenes researcherster	
Mov Cap-1 Maneuver	90	101	522	59	99	626	996		-	1136						
Mov Cap-2 Maneuver	90	101	-	59	99	-	-	-	- 1932/1929/4866	- 	-	-	a contrata de la cont			900k
Stage 1	370	504	-	265	281	-	-	5. ( ) ( <del>.</del>			-	-		and such		
Stage 2	263	281	-	333	498	`- 00000000	- 92000000000	- ::::::::::::::::::::::::::::::::::::	- 2000/00/00	-	-	- 88838888888888		in an an		
Approach	EB			WB			NB			SB						
HCM Control Delay, s	25.4			56.4			. 3			0						
HCM LOS	D	ning frankrist in hier rokerd	Lac 2. 09 369 10 10 10 10 10	F	an sanan an sana sa an sana sa	ter: urraeyseeneen	er okon olen olen den bee olen.	eer soren oor oor oor oor oor oor	97 966 796 796 796 796 796 796 796 796 7			and the construction of the second	12001.00.00.00.00.00.00			
Minor Lane/Major Mvn	nt	NBL	MBT	MRR	EBLn1	FBL n2	WBI n1	SBL	SBT	SBR	a an ann	S. 1974 (5	No. Star			
	HI - THE P	996	photon prap yer. The		90	522		1136								
Capacity (veh/h) HCM Lane V/C Ratio		0.204	0.00409.000.0040.004		じょうちょうちゃくていをすいちょうちょう	WARD COULD AND SO	0.054	011-148-ABOTTARTABITART	179917 M. 1228 - Mar 12980							脱额
HCM Control Delay (s	1	9.5	and the second	and the second state of a second state of the	69.5	A LOOK DARK CARE CARE CONT	THE REPORT OF THE PARTY OF	8.2	0101-002-028/924-908	- 						
HCM Control Delay (S	t i sta	9.9 A	евзитовотесть «тама	8757945 <b>9</b> 746754 *776* 68	05.5 F	14.0 B	*??*???????????????????????????????????	2.0 A	TARGET A CONCAST	001 V001 001 001 000 000 000 000						激游
HCM 95th %tile Q(veh	n)	0.8			1.6		The Article Property and A shifts and		Contract Street Course & Address							
I TOW SOUL WILL CLACK	<b>y</b>	0.0	Chi Alba		1.0	te I	0.2		an de la Carta de Car Carta de Carta de Cart	94. (* 1697) 1	NO AND			ANN		8199 y

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Intersection						-		£									
Int Delay, s/veh	1.4																
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF	۲.				
Lane Configurations	e san in	Ź	£	1 an	<u></u>	a star	<u> </u>	<b>A</b>		<b>.</b>	<u></u>		. (	er in andere	an an tao		8724 8724
Traffic Vol, veh/h Future Vol, veh/h	1	✓ U 0	43 43	• 1. 1	/ 1 1	✓ 0 0	81 81	516 516	<1. 1	1 \ 1	624 · 624	1212040909	4 4			AR 35 T	
Conflicting Peds, #/hr	0	0		0	, 0	0	0	0	0	0	024		+ )				
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	essen avera		90990.897	990999999	
RT Channelized	- 1992 <u>-</u>		None			None	-		None	÷		Non	e				
Storage Length	- 8468-58	-	250	- 1963-1974	-	-	- (NGN): NSAC	- 0.5500 <b>2</b> 0	- 2000000000	- 1911 - 1913	- 20.000	o BORCIOS	_ SectEX Mill				
Veh in Median Storage Grade, %	,# -	0 0	624.25	- 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 199 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999	0 0	- 1997 - 1997 <del>-</del> 1997 - 1997	90.989 <del>5</del> 0	0 0	•	en sen <del>t</del> s	0 0		₩00.000				
Peak Hour Factor	- 75	75	- 75	- 50	50	- 50	- 88	88	- 88	- 92	92	9	- 2				
Heavy Vehicles, %	0	0	0	0	0	0	0		0	0	1	es a management	0		- 9905330962985	REENS MEETERS	2259236
Mvmt Flow	1	0	57	2	2	0	92	586	1	1	678		4 .				
Major/Minor	Minor2		1	Minor1		-	Major1			Major2							
Conflicting Flow All	1454	1453	680	1482	1455	587	682	0	0	587	0	n en sourcestat	0		olisialiyekketketket	cht wie werkenden	Sector de
Stage 1	682	682	-	771	771	-	•	-		-	-		-				
Stage 2 Critical Hdwy	772 7.1	771 6.5	- 6.2	711 7.1	684 6.5	6.2	- 4.1	- 2000-92	- 9999999	- 4.1	- 1995		- 12:0000			5.0° 0.00	
Critical Hdwy Stg 1	6.1	5.5	- 0.2	6.1	5.5	- U.		-	-	- Т.Т. -	-		-			ERSCOPSAG	19997 S.
Critical Hdwy Stg 2	6.1	5.5	-	6,1	5.5	-	-	-	-	-	-		-				
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	unit chinad	-		2011/02/02/02	- 202003-00-00-00-	BEARACE.
Pot Cap-1 Maneuver	109	132	454	104	131	513	920	-	-	998	-		-				
Stage 1 Stage 2	443 395	453 413	-	396 427	413 452	-	- 2000 -	-	- 2000	- 2452-2	-		- 1999-199				
Platoon blocked, %	000	710			792		0.000	- -	-		- -	1.1.1.1993	-				2509397
Mov Cap-1 Maneuver	95	112	454	80	111	513	920	-	-	998	-		•				
Mov Cap-2 Maneuver	95	112	-	80	111	-	-	- 1079/10/10/100	-	-	-	n onter No	-	croncontra	000002.0004		23653625
Stage 1	377	452 352	-	337 372	352 451	-	-	-	-	-	-		-				
Stage 2	335	302	- 82000	312	401	-	-	-	-	- (* 1999)	-		-				
A	ED			34/05						00							
Approach	EB 14.8			WB 45.4			NB 13			SB 0						Constant States	
HCM Control Delay, s HCM LOS	14.0 B			40.4 E			1,0			U							
				_													
Minor Lane/Major Mvn	at	NBL	NBT	NBR	FBI n1	EBLn2	WBI n1	SBL	SBT	SBR							
Capacity (veh/h)		920		-	argonal another page 201	STATISTICS AND STATISTICS	<u>93</u>	998	-		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	<u></u>	<u></u>		ante and selection		
HCM Lane V/C Ratio	913/13/18/19/28	0.1	-	which have a set of the second second	0.014	0.126	0.043	112.0112.6112.6112.622.000		-	n - 1940, M.	2043239787882894	retien setter s	ar sen sen se sen se	en an thair	walitik titik Olifiki	w##77765
HCM Control Delay (s)	)	9.3	0	nan se sensenar	zanan memerang	14.1	さろうち ちゅうちんだん さたいいりせい	8.6	CARGON CARGARINA	GRAMMARK PROCESSA							
HCM Lane LOS	A	A	A	-	E م	A second second second second second	E	A		-							
HCM 95th %tile Q(veh	Ŋ.	0.3	-	r ser e	0	0.4	0.1	0	•	1000 - C							

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Intersection																
Int Delay, s/veh	5.4															
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR				
Lane Configurations		Â	1	é	<u></u>	and the	e	ф			sf.	ster in	l		ture and a long the sec	
Traffic Vol, veh/h	27	/ 0	• 111 ·	<b>/</b> 1	1		185/		212.00 C 11.00 C 2010	<b>√</b> 1	€569	영국 전자 영국 영향을 알았다.				
Future Vol, veh/h	27	0	111	1	1	0	185	426	1	1	569	28	en e		9 - Art Alex An	GPRA
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0				
Sign Control RT Channelized	Stop	Stop	Stop None	Stop	Stop	Stop None	Free	Free	Free None	Free	Free	Free None				
Storage Length	- -		250		9799777 -	- 140110	939/2873 -	99937 <u>7</u> 8 -	INONE -	999999 <u>7</u> 9	1999) -	-			88 (1990) (1897) 19	
Veh in Median Storage,	# -	0		÷.	0	201 <b>4</b>	200 E	0	-		0	-				
Grade, %	-	0	-	-	0	-	-	0	10-10-10-10-10-10-1 -	-	0	-			ore solo, or the design	01-127.5
Peak Hour Factor	75	75	75	50	50	50	88	88	88	400973973493493497249774-7	92	92				
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0		1	0	ak tarakatan	2202252042		annea
Mymt Flow	36	0	148	2	2	0	210	484	1	1	618	30				
	Market and the second		No. 19 States of States		anno marconatore	11. FUERO CO. 1400				an and a single and	Process and Processing	n an za tak any a datakan		and the second second second second	Na segara a secondor sedan.	1960107492084
	Ainor2		Con all the second	Ainor1			Major1			Major2						
Conflicting Flow All	1541	1540	633	1614	1555	485	648	0	0	485	0	0				
Stage 1 Stage 2	635 906	635 905	-	905 709	905 650		•	909 (j. <del>.</del>	-	-	•	-				
Critical Hdwy	7.1	6.5	- 6.2	7.1	6.5	- 6.2	4.1	- 2000	- 	- 4.1	-	-		tines. Se		
Critical Hdwy Stg 1	6.1	5.5	- -	6.1	5.5	- U.L	्यः सः -	9823999 -	- -	्य-। -		- -				199 <b>2</b> 975
Critical Hdwy Stg 2	6.1	5.5	- 11 -	6.1	5.5		-	-			-	-				
Follow-up Hdwy	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-		************	ene su navene noo	NATION (1-46
Pot Cap-1 Maneuver	95	117	483	85	114	586	947	- N		1088		<u> </u>				
Stage 1	470	476	-	334	358	-	-	-	-	- 	-	-				1.5790Ca
Stage 2	333	358	• •	428	468	-	-	-	-	-	-	-				
Platoon blocked, % Mov Cap-1 Maneuver	71	81	483	45	79	586	947	- -	-	1088	- 2000000	-				
Mov Cap-2 Maneuver	71	81	- 400	45	79	- 000	- 541	-	-			-				CH SA
Stage 1	327	476	-	232	249	- -	- 	-	-	-	-	-				
Stage 2	230	249	-	297	468	-	-			•	-	-				
Approach	EB			WB			NB			SB						
HCM Control Delay, s	32.1			72.9			3			0						
HCM LOS	D			F						*****						
Minor Lane/Major Mvm	it	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR						
Capacity (veh/h)		947	-	-	71	483	57	1088	No conservator acce							
HCM Lane V/C Ratio		0.222		such as the she will be the		0.306		0.001	•							
HCM Control Delay (s)		9.9	0	-	99.3	2012/2012/2012/2012/2012/2012	72.9	sanna an	enecremente	CORDEN SUCCESSION SUCCESSION						
HCM Lane LOS	<b>V</b>	A	А	- 1989:1996:5	F			A		erteni Lottanianiania	an a			946-1273-598V		1997 P.
HCM 95th %tile Q(veh	)	0.8	÷.	-	2.1	1,3	0.2	.0								