ENVIRONMENTAL ASSESSMENT/ DRAFT ENVIRONMENTAL IMPACT REPORT

Terminal E Modernization Project

Boston-Logan International Airport EAST BOSTON, MASSACHUSETTS

EEA# 15434



PREPARED FOR



Massachusetts Port Authority

PREPARED BY



IN ASSOCIATION WITH

AECOM Harris Miller Miller & Hanson, Inc. KB Environmental Sciences, Inc. LeighFisher, Inc.

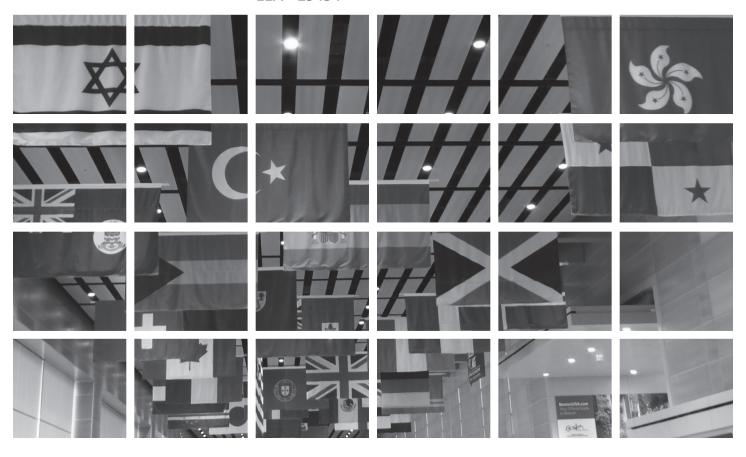
July 15, 2016

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Appendices

Volume I:

- Appendix A, MEPA Environmental Notification Certificate and Response to Comments
- Appendix B, Draft Section 61 Findings

Volume II:

- Appendix C, Federal Aviation Administration Terminal Area Forecast
- Appendix D, Noise Technical Appendix
- Appendix E, Surface Transportation Technical Appendix
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Appendix C Federal Aviation Administration Terminal Area Forecast

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APO Terminal Area Forecast Summary Report Forecast Issued January 2016

Region State: ANE-MA City: BOSTON

LOCID: BOS Limited Radar Towers

Airport: GENERAL EDWARD LAWRENCE LOGAN INTL

			Total Ops	448,490	440,715	482,582	495,347	478,660	478,253	462,507	494,321	511,903	505,483	510,113	499,474	405,370	381,855	409,307	428,877	412,358	410,295	384,640	359,578	366,275	373,890	364,193	361,343	368,526	372,019	
	ations		Military Total Local	1,497	•	ı	ı	ı	ı	ı	ı	ı	1	723	2,073	1,136	457	245	123	101	18	23	ı	ı	ı	ı	1	ı	ı	
	Local Operations		Military	ı	1	•	ı	1	ı	ı	1	1	1	15	99	10	1	ı	23	∞	ı	1	1	ı	ı	1	ı	ı	•	
			Civil	1,497	ı	1	1	1	ı	1	1	1	1	708	2,007	1,126	457	245	100	93	18	22	1	1	1	1	1	ı	1	
erations		Total	ltinerant	446,993	440,715	482,582	495,347	478,660	478,253	462,507	494,321	511,903	505,483	509,390	497,401	404,234	381,398	409,062	428,754	412,257	410,277	384,617	359,578	366,275	373,890	364,193	361,343	368,526	372,019	
Aircraft Operations	ons		Military	540	645	989	620	620	229	661	759	280	610	269	612	673	496	714	736	773	512	493	522	925	720	658	717	729	978	
∢	Itinerant Operations		ВA	42,567	30,924	31,954	27,265	29,416	38,985	28,241	34,030	34,236	35,659	33,213	25,262	18,241	19,111	27,284	28,709	25,070	21,266	20,324	17,615	18,767	17,353	15,227	14,823	15,362	14,953	
	ltinera	Air Taxi &	Commuter	157,424	175,199	207,689	225,548	202,391	196,929	203,003	219,169	226,457	204,453	203,744	208,069	178,182	173,839	170,259	179,316	174,100	178,658	165,689	158,057	166,787	171,416	83,535	79,060	74,004	71,321	
			Air Carrier	246,462	233,947	242,253	241,914	246,233	241,662	230,602	240,363	250,630	264,761	271,864	263,458	207,138	187,952	210,805	219,993	212,314	209,841	198,111	183,384	179,796	184,401	264,773	266,743	278,431	284,767	
	ts	Total	Enplanements	11,082,539	10,609,110	10,936,382	11,477,663	12,071,084	11,954,568	12,177,509	12,249,145	12,661,728	13,087,607	13,777,162	12,939,387	10,678,940	10,984,295	12,488,218	13,192,685	13,410,794	13,847,006	13,157,454	12,371,847	13,240,041	14,127,938	14,325,928	14,598,002	15,229,066	15,997,639	
	Enplanements	F	Commuter	804,563	800,102	871,294	1,202,674	1,037,216	1,028,323	1,025,361	1,045,898	996,141	967,062	1,065,800	1,159,525	953,377	1,257,249	1,441,592	1,624,173	1,472,961	1,550,867	1,399,019	1,367,114	1,352,871	1,429,607	1,238,341	1,202,512	1,224,134	1,180,597	
			Air Carrier	10,277,976	800'608'6	10,065,088	10,274,989	11,033,868	10,926,245	11,152,148	11,203,247	11,665,587	12,120,545	12,711,362	11,779,862	9,725,563	9,727,046	11,046,626	11,568,512	11,937,833	12,296,139	11,758,435	11,004,733	11,887,170	12,698,331	13,087,587	13,395,490	14,004,932	14,817,042	
		Fiscal	Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	

APO Terminal Area Forecast Summary Report Forecast Issued January 2016

							40.0.					
						4	Aircrait Operations	erations				
		Enplanements	nts		Itinera	Itinerant Operations	ons			Local Operations	rations	
Fiscal			Total		Air Taxi &			Total				
Year	Air Carrier	Commuter	Enplanements	Air Carrier	Commuter	ВA	Military	Itinerant	Civil	Military	Military Total Local	Total Ops
2017	16,422,360	1,308,023	17,730,383	314,629	74,182	14,918	826	404,707	ı	1	1	404,707
2018	16,816,793	1,338,967	18,155,760	322,293	73,585	14,958	978	411,814	ı	1	•	411,814
2019	17,224,726	1,371,252	18,595,978	330,332	72,805	14,998	978	419,113	ı	ı	ı	419,113
2020	17,673,992	1,406,647	19,080,639	339,326	72,034	15,039	978	427,377	ı	ı	ı	427,377
2021	18,128,994	1,445,486	19,574,480	348,752	71,348	15,080	978	436,158	ı	1	•	436,158
2022	18,550,422	1,482,255	20,032,677	357,811	70,107	15,121	978	444,017	ı	1	1	444,017
2023	18,951,096	1,515,886	20,466,982	365,854	69,426	15,162	978	451,420	ı	1	1	451,420
2024	19,349,950	1,548,315	20,898,265	373,062	69,685	15,203	978	458,928	ı	1	1	458,928
2025	19,745,999	1,580,920	21,326,919	380,057	70,170	15,244	978	466,449	ı	ı	ı	466,449
2026	20,161,672	1,614,249	21,775,921	387,420	70,706	15,285	978	474,389	ļ	1	•	474,389
2027	20,587,230	1,648,249	22,235,479	395,008	71,300	15,326	978	482,612	ļ	1	•	482,612
2028	21,011,927	1,682,518	22,694,445	402,587	71,907	15,367	978	490,839	į	1	1	490,839
2029	21,436,477	1,715,483	23,151,960	410,129	72,305	15,409	978	498,821	į	ı	•	498,821
2030	21,864,007	1,748,770	23,612,777	417,738	72,802	15,451	978	506,969	į	1	1	506,969
2031	22,288,257	1,781,277	24,069,534	425,268	73,167	15,493	826	514,906	į	1	1	514,906
2032	22,713,857	1,813,742	24,527,599	432,786	73,594	15,535	978	522,893	į	1	ı	522,893
2033	23,164,716	1,849,622	25,014,338	440,929	74,171	15,577	978	531,655	į	ı	•	531,655
2034	23,622,398	1,886,809	25,509,207	449,208	74,890	15,619	978	540,695	į	1	ı	540,695
2035	24,089,778	1,925,158	26,014,936	457,713	75,685	15,661	978	550,037	į	1	1	550,037
2036	24,551,933	1,963,084	26,515,017	466,116	76,596	15,703	978	559,393	į	ı	•	559,393
2037	25,009,921	2,000,787	27,010,708	474,412	77,426	15,745	978	568,561	į	ı	•	568,561
2038	25,476,087	2,039,438	27,515,525	482,930	78,220	15,788	978	577,916	ļ	1	•	577,916
2039	25,939,342	2,077,268	28,016,610	491,363	79,003	15,831	978	587,175	į	1	1	587,175
2040	26,403,311	2,114,613	28,517,924	499,765	79,697	15,874	978	596,314	ı	1	ı	596,314

Appendix D Noise Technical Appendix

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Appendix D Noise Technical Appendix

Introduction

This document presents an introduction to noise and its effects, details on the measurement program undertaken for the Terminal E Modernization Project, and details on the SoundPLAN model.

Fundamentals of Acoustics and Environmental Noise

This section introduces the fundamentals of acoustics and noise terminology as well as the effects of noise on human activity and community annoyance.

Introduction to Acoustics and Noise Terminology

The noise sections of Chapter 4, Affected Environment and Chapter 5, Environmental Consequences of this Environmental Assessment rely largely on a measure of cumulative noise exposure over an entire calendar year, in terms of a metric called the Day-Night Average Sound Level (DNL). However, DNL does not always provide a sufficient description of noise for many purposes. Other measures are available to address essentially any issue of concern. This section introduces the following acoustic metrics, which are all related to DNL, but provide bases for evaluating a broad range of noise situations.

- Decibel (dB);
- A-Weighted Decibel (dBA);
- Maximum Level (L_{max});
- Sound Exposure Level (SEL);
- Equivalent Sound Level (Leq); and
- DNL.

The Decibel (dB)

All sounds come from a sound source – a musical instrument, a voice speaking, or an airplane that passes overhead. It takes energy to produce sound. The sound energy produced by any sound source is transmitted through the air in the form of sound waves – tiny, quick oscillations of pressure just above and just below atmospheric pressure. These oscillations, or sound pressures, impinge on the ear, creating the sound we hear.

Our ears are sensitive to a wide range of sound pressures. The loudest sounds that we hear without pain have about one million times more energy than the quietest sounds we hear. However, our ears are



incapable of detecting small differences in these pressures. Thus, to match how we hear this sound energy, we compress the total range of sound pressures to a more meaningful range by introducing the concept of sound pressure level (SPL). SPL is a measure of the sound pressure of a given noise source relative to a standard reference value (typically the quietest sound that a young person with good hearing can detect). SPLs are measured in decibels (abbreviated dB). Decibels are logarithmic quantities – logarithms of the squared ratio of two pressures, the numerator being the pressure of the sound source of interest, and the denominator being the reference pressure (the quietest sound we can hear).

The logarithmic conversion of sound pressure to SPL means that the quietest sound we can hear (the reference pressure) has a SPL of about 0 dB, while the loudest sounds we hear without pain have SPLs of about 120 dB. Most sounds in our day-to-day environment have SPLs from 30 to 100 dB.

Because decibels are logarithmic quantities, they do not behave like regular numbers with which we are more familiar. For example, if two sound sources each produce 100 dB and they are operated together, they produce only 103 dB – not 200 dB as we might expect. Four equal sources operating simultaneously result in a total SPL of 106 dB. In fact, for every doubling of the number of equal sources, the SPL goes up another three decibels. A tenfold increase in the number of sources makes the SPL go up 10 dB. A hundredfold increase makes the level go up 20 dB, and it takes a thousand equal sources to increase the level 30 dB.

If one source is much louder than another source, the two sources together will produce the same SPL (and sound to our ears) as if the louder source were operating alone. For example, a 100 dB source plus an 80 dB source produces 100 dB when operating together. The louder source "masks" the quieter one, but if the quieter source gets louder, it will have an increasing effect on the total SPL. When the two sources are equal, as described above, they produce a level three decibels above the sound of either one by itself.

From these basic concepts, note that one hundred 80 dB sources will produce a combined level of 100 dB; if a single 100 dB source is added, the group will produce a total SPL of 103 dB. Clearly, the loudest source has the greatest effect on the total decibel level.



A-Weighted Decibel, dBA

Another important characteristic of sound is its frequency, or "pitch." This is the rate of repetition of the sound pressure oscillations as they reach our ear. Formerly expressed in cycles per second, frequency is now expressed in units known as Hertz (Hz).

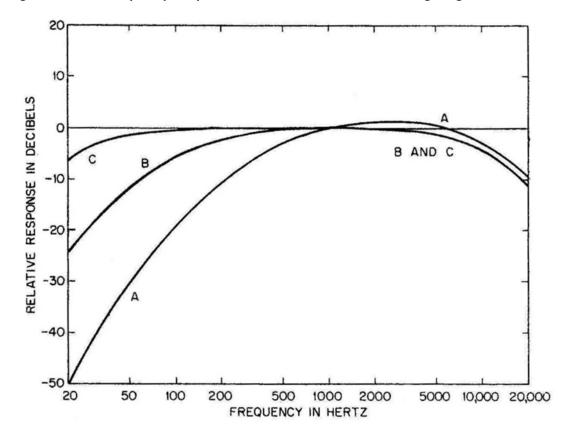
Most people hear from about 20 Hz to about 10,000 to 15,000 Hz. People respond to sound most readily when the predominant frequency is in the range of normal conversation, around 1,000 to 2,000 Hz. Acousticians have developed "filters" to match our ears' sensitivity and help us to judge the relative loudness of sounds made up of different frequencies. The so-called "A" filter does the best job of matching the sensitivity of our ears to most environmental noises. SPLs measured through this filter are referred to as A-weighted levels (dBA). A-weighting significantly de-emphasizes noise at low and very high frequencies (below about 500 Hz and above about 10,000 Hz) where we do not hear as well. Because this filter generally matches our ears' sensitivity, sounds having higher A-weighted sound levels are usually judged louder than those with lower A-weighted sound levels, a relationship which does not always hold true for unweighted levels. It is for these reasons that A-weighted sound levels are normally used to evaluate environmental noise.

Other weighting networks include the B and C filters. They correspond to different level ranges of the ear. The rarely used B-weighting attenuates low frequencies (those less than 500 Hz), but to a lesser degree than A-weighting. C-weighting is nearly flat throughout the audible frequency range, hardly de-emphasizing low frequency noise. C-weighted levels can be preferable in evaluating sounds whose low-frequency components are responsible for secondary effects such as the shaking of a building, window rattle, or perceptible vibrations. Uses include the evaluation of blasting noise, artillery fire, and in some cases, aircraft noise inside buildings.

Figure D-1 compares these various weighting networks.



Figure D-1 Frequency-Response Characteristics of Various Weighting Networks



Source: Harris, Cyril M., editor; Handbook of Acoustical Measurements and Noise Control, (Chapter 5, "Acoustical Measurement Instruments"; Johnson, Daniel L.; Marsh, Alan H.; and Harris, Cyril M.); New York; McGraw-Hill, Inc.; 1991; p. 5.13.

Because of the correlation with our hearing, the A-weighted level has been adopted as the basic measure of environmental noise by the U.S. Environmental Protection Agency (EPA) and by nearly every other federal and state agency concerned with community noise. **Figure D-2** presents typical A-weighted sound levels of several common environmental sources.



Figure D-2 Common Environmental Sound Levels, in dBA

Outdoor	Typical Sound Leve	els Indoor
Concorde, Landing 2000 m (~ 6600 ft) from Runwa	y End 110	Rock Band
727-100 Takeoff 6500 m (~ 21300 ft) from Start of	Takeoff Roll	Inside Subway Train (New York)
747-200 6500 m (~ 21300 ft) from Start of Takeoff Diesel Truck at 50 ft	90	Food Blender at 3 ft.
Noisy Urban Daytime	80	Garbage Disposal at 3 ft. Shouting at 3 ft.
757-200 6500 m (~ 21300 ft) from Start of Takeoff	70	Vacuum Cleaner at 10 ft.
Commercial Area Cessna 172 Landing 2000 m (~ 6600 ft) from Runv	vay End 60	Normal Speech at 3 ft.
Quiet Urban Daytime	50	Large Business Office Dishwasher Next Room
Quiet Urban Nighttime	40	Small Theater, Large Conference
Quiet Suburban Nighttime	30	Library Bedroom at night
Quiet Rural Nighttime	20	Concert Hall (Background)
	10	Broadcast & Recording Studio
		Threshold of Hearing
	0	

Source: HMMH (Aircraft noise levels from FAA Advisory Circular 36-3H)



An additional dimension to environmental noise is that A-weighted levels vary with time. For example, the sound level increases as an aircraft approaches, then falls and blends into the background as the aircraft recedes into the distance (though even the background varies as birds chirp or the wind blows or a vehicle passes by). **Figure D-3** illustrates this concept.

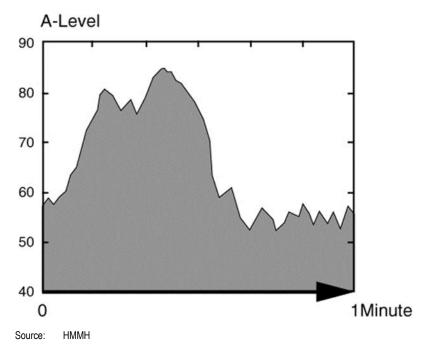


Figure D-3 Variations in the A-Weighted Sound Level Over Time

Maximum A-Weighted Noise Level, Lmax

The variation in noise level over time often makes it convenient to describe a particular noise "event" by its maximum sound level, abbreviated as L_{max} . In the figure above, it is approximately 85 dBA.

The maximum level describes only one dimension of an event; it provides no information on the cumulative noise exposure. In fact, two events with identical maxima may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be judged much more annoying. The next measure corrects for this deficiency.

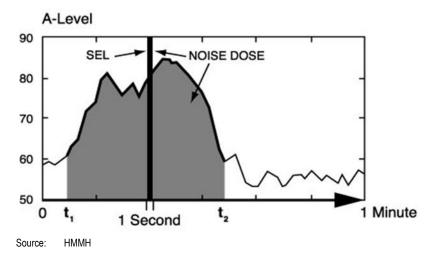
Sound Exposure Level (SEL)

The most frequently used measure of noise exposure for an individual aircraft noise event is the SEL. SEL is a measure of the total noise energy produced during an event, from the time when the A-weighted sound level first exceeds a threshold level (normally just above the background or ambient noise) to the time that the sound level drops back down below the threshold. To allow comparison of noise events with very different durations, SEL "normalizes" the duration in every case to one second; that is, it is expressed as the steady noise level with just a one-second duration that includes the same amount of noise energy as the actual longer duration, time varying noise. In lay terms, SEL "squeezes" the entire noise event into one second.



Figure D-4 depicts this transformation. The shaded area represents the energy included in an SEL measurement for the noise event, where the threshold is set to 60 dBA. The dark shaded vertical bar, which is 90 dBA high and just one second long (wide), contains exactly the same sound energy as the full event.

Figure D-4 Sound Exposure Level (SEL)



Because the SEL is normalized to one second, it will always be larger than the L_{max} for an event longer than one second. In this case, the SEL is 90 dB; the L_{max} is approximately 85 dBA. For most aircraft overflights, the SEL is normally on the order of 7 to 12 dB higher than L_{max} . Because SEL considers duration, longer exposure to relatively slow, quiet aircraft, such as propeller models, can have the same or higher SEL than shorter exposure to faster, louder planes, such as corporate jets.

Equivalent Sound Level (Leq)

The L_{max} and SEL quantify the noise associated with individual events. The remaining metrics in this section describe longer-term cumulative noise exposure that can include many events.

The Equivalent Sound Level (L_{eq}) is a measure of exposure resulting from the accumulation of A-weighted sound levels over a particular period of interest (e.g., an hour, an eight-hour school day, nighttime, or a full 24 hour day). Because the length of the period can differ, the applicable period should always be identified or clearly understood when discussing the metric. Such durations are often identified through a subscript, for example $L_{eq}(8)$ or $L_{eq}(24)$.

 $L_{\rm eq}$ is equivalent to the constant sound level over the period of interest that contains as much sound energy as the actual time-varying level. This is illustrated in **Figure D-5**. Both the solid and striped shaded areas have a one-minute $L_{\rm eq}$ value of 76 dB. It is important to recognize, however, that the two signals (the constant one and the time-varying one) would sound very different in real life. Also, be aware that the



"average" sound level suggested by L_{eq} is not an arithmetic value, but a logarithmic, or "energy-averaged" sound level. Thus, loud events dominate L_{eq} measurements.

A-Level

90

80

70

60

50

1Minute

Figure D-5 Example of a One Minute Equivalent Sound Level (Leq)

Source: HMMH

In airport noise studies, L_{eq} is often presented for consecutive one-hour periods to illustrate how the exposure rises and falls throughout a 24-hour period, and how individual hours are affected by unusual activity, such as rush hour traffic or a few loud aircraft.

Day-Night Average Sound Level (DNL)

Virtually all studies of aircraft noise rely on a slightly more complicated measure of noise exposure that describes cumulative noise exposure during an average annual day: the DNL. The EPA identified DNL as the most appropriate means of evaluating airport noise based on the following considerations:¹

- 1. The measure should be applicable to the evaluation of pervasive long-term noise in various defined areas and under various conditions over long periods.
- 2. The measure should correlate well with known effects of the noise environment and on individuals and the public.
- 3. The measure should be simple, practical, and accurate. In principal, it should be useful for planning as well as for enforcement or monitoring purposes.
- 4. The required measurement equipment, with standard characteristics, should be commercially available.
- 5. The measure should be closely related to existing methods currently in use.
- 6. The single measure of noise at a given location should be predictable, within an acceptable tolerance, from knowledge of the physical events producing the noise.
- 7. The measure should lend itself to small, simple monitors, which can be left unattended in public areas for long periods.²

¹ EPA. 1974. Information Levels of Environmental Noise Requisite to Project Public Health and Welfare with an Adequate Margin of Safety. 2 Ibid.



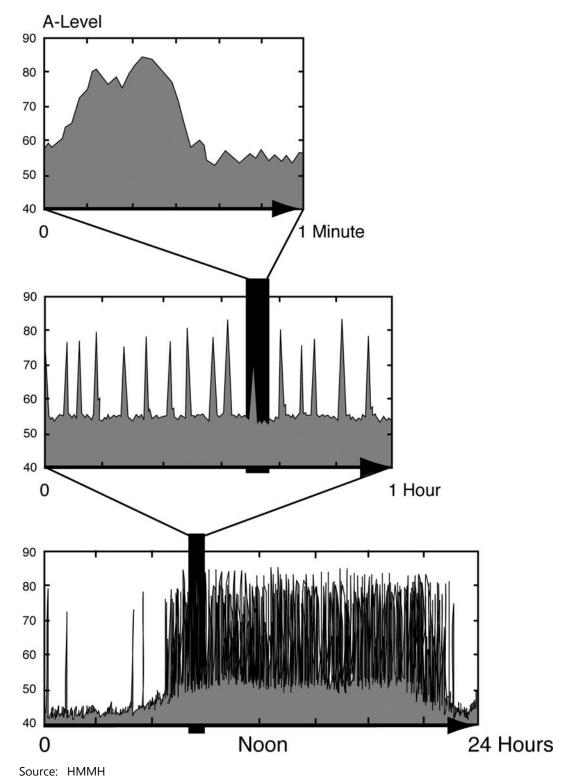
Most federal agencies dealing with noise have formally adopted DNL. The Federal Interagency Committee on Noise (FICON) reaffirmed the appropriateness of DNL in 1992. The Federal Interagency Committee on Noise summary report stated; "There are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric." The DNL represents noise as it occurs over a 24-hour period, with one important exception: DNL treats nighttime noise differently from daytime noise. In determining DNL, it is assumed that the A-weighted levels occurring at night (defined as 10:00 PM to 7:00 AM) are 10 dB louder than they really are. This 10 dB penalty is applied to account for greater sensitivity to nighttime noise, and the fact that events at night are often perceived to be more intrusive because nighttime ambient noise is less than daytime ambient noise.

Figure D-5 illustrated the A-weighted sound level due to an aircraft fly-over as it changed with time. The top frame of **Figure D-6** repeats this figure. The shaded area reflects the noise dose that a listener receives during the one-minute period of the sample. The center frame of **Figure D-6** includes this one-minute sample within a full hour. The shaded area represents the noise during that hour with 16 noise events, each producing an SEL. Similarly, the bottom frame includes the one-hour interval within a full 24 hours. Here the shaded area represents the listener's noise dose over a complete day. Note that several overflights occur at a time when the background noise drops some 10 dB, to approximately 45 dBA.

DNL can be measured or estimated. Measurements are practical only for obtaining DNL values for relatively limited numbers of points, and, in the absence of a permanently installed monitoring system, only for relatively short time periods. Most airport noise studies are based on computer-generated DNL estimates, determined by accounting for all of the SELs from individual events, which comprise the total noise dose at a given location. Computed DNL values are often depicted in terms of equal-exposure noise contours (much as topographic maps have contours of equal elevation). **Figure D-7** depicts typical DNL values for a variety of noise environments.



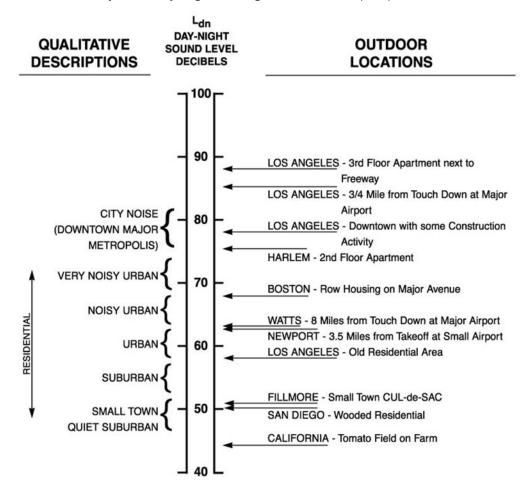
Figure D-6 Daily Noise Dose



Source. Hilvilli



Figure D-7 Examples of Day-Night Average Sound Levels (DNL)



Source: EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, p. 14.

The Effects of Aircraft Noise on People

To residents around airports, aircraft noise can be an annoyance and a nuisance. It can interfere with conversation and listening to television, it can disrupt classroom activities in schools, and it can disrupt sleep. Relating these effects to specific noise metrics helps in the understanding of how and why people react to their environment.



Speech Interference

A primary effect of aircraft noise is its tendency to drown out or "mask" speech, making it difficult to carry on a normal conversation. The sound level of speech decreases as the distance between a talker and listener increases. As the background sound level increases, it becomes harder to hear speech. **Figure D-8** presents typical distances between talker and listener for satisfactory outdoor conversations, in the presence of different steady A-weighted background noise levels for raised, normal, and relaxed voice effort. As the background level increases, the talker must raise his/her voice, or the individuals must get closer together to continue talking.

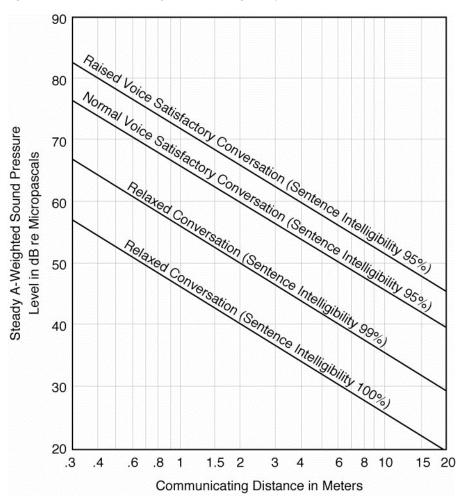


Figure D-8 Outdoor Speech Intelligibility

Source: EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974, p. D-5.

As indicated in the figure, "satisfactory conversation" does not always require hearing every word; 95% intelligibility is acceptable for many conversations. Listeners can infer a few unheard words when they occur in a familiar context. However, in relaxed conversation, we have higher expectations of



hearing speech and generally require closer to 100% intelligibility. Any combination of talker-listener distances and background noise that falls below the bottom line in **Figure D-8** (thus assuring 100% intelligibility) represents an ideal environment for outdoor speech communication and is considered necessary for acceptable indoor conversation as well.

One implication of the relationships in **Figure D-8** is that for typical communication at distances of 3 or 4 feet (1 to 1.5 meters), acceptable outdoor conversations can be carried on in a normal voice as long as the background noise outdoors is less than about 65 dBA. If the noise exceeds this level, as might occur when an aircraft passes overhead, intelligibility would be lost unless vocal effort were increased or communication distance were decreased.

Indoors, typical distances, voice levels, and intelligibility expectations generally require a background level less than 45 dBA. With windows partly open, housing generally provides about 12 dBA of interior-to-exterior noise level reduction. Thus, if the outdoor sound level is 60 dBA or less, there is a reasonable chance that the resulting indoor sound level will afford acceptable conversation inside. With windows closed, 24 dB of attenuation is typical.



Sleep Interference

Research on sleep disruption from noise has led to widely varying observations. In part, this is because (1) sleep can be disturbed without awakening, (2) the deeper the sleep the more noise it takes to cause arousal, and (3) the tendency to awaken increases with age, and other factors. **Figure D-9** shows one such relationship from recent research conducted in the U.S. – the probability that a group of people will be awakened at least once when exposed to a given indoor SEL.

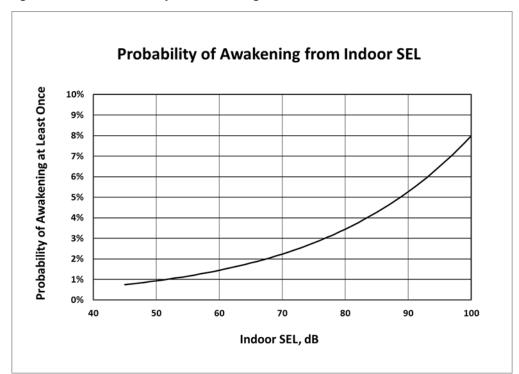


Figure D-9 Probability of Awakening at Least Once from Indoor Noise Event

Source: ANSI S12.9-2008/Part 6, Quantities and Procedures for Description and Measurement of Environmental Sound — Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes; Equation 1

For example, an indoor SEL of 80 dB results in approximately 3.5% of the exposed population being awakened. If windows are open in the bedroom on a warm evening and a house provides a typical outside to inside noise level reduction of around 15 dB, which suggests it takes an SEL of about 95 dB outdoors to awaken 3.5% of the population. The American National Standards Institute (ANSI) has extended this concept further and developed a standard (ANSI S12.9-2008/Part 6) for computing the percentage of the population that is likely to be awakened by multiple noise events occurring throughout the night. The Federal Interagency Committee on Aviation Noise subsequently endorsed the standard as the best available means of estimating behavioral awakenings from aircraft noise.

Community Annoyance

Social survey data make it clear that individual reactions to noise vary widely for a given noise level. Nevertheless, as a group, people's aggregate response is predictable and relates well to measures of



cumulative noise exposure such as DNL. **Figure D-10** shows a widely recognized relationship between environmental noise and annoyance.

100 USAF (Findgold et al. 1992) DATA 400 POINTS %HA - 100/(1 + EXP (11.13 - .141 LDN)) (Solid Line) 80 SCHULTZ DATA 161 POINTS %HA - 100/(1 + EXP(10.43 - .132 LDN) (Dashed Line) % HIGHLY ANNOYED 60 40 20 Day - Night Average 50 40 45 55 60 65 70 75 80 85 100 Sound Level in dB USAF 0.41 0.831 1.66 3.31 6.48 12.29 22.1 36.47 53.74 70.16 82.64 Calculated %HA Points SCHULTZ 0.576 2.12 7.52 13.59 23.32 37.05 53.25 68.78 1.11 4.03 81

Figure D-10 Percentage of People Highly Annoyed

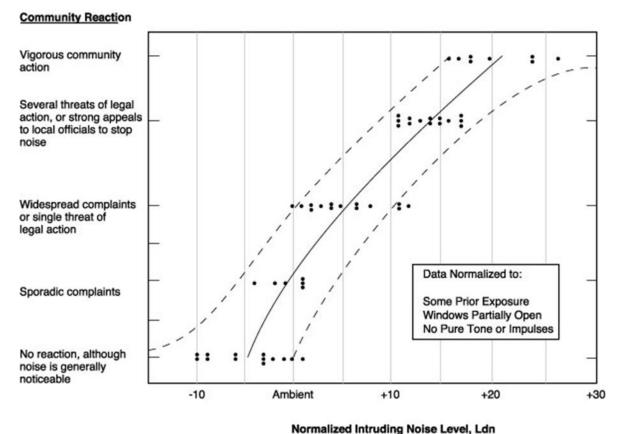
Source: FICON. "Federal Agency Review of Selected Airport Noise Analysis Issues." August 1992. (From data provided by USAF Armstrong Laboratory). pp. 3-6.

Based on data from 18 surveys conducted worldwide, the curve indicates that at levels as low as DNL 55 dB, approximately 5% of the people will still be highly annoyed, with the percentage increasing more rapidly as exposure increases above DNL 65 dB.

Separate work by the EPA has shown that overall community reaction to a noise environment can also be related to DNL. This relationship is shown in **Figure D-11**. Levels have been normalized to the same set of exposure conditions to permit valid comparisons between ambient noise environments. Data summarized in **Figure D-11** suggest that little reaction would be expected for intrusive noise levels five decibels below the ambient, while widespread complaints can be expected as intruding noise exceeds background levels by about five decibels. Vigorous action is likely when the background is exceeded by 20 dB.



Figure D-11 Community Reaction as a Function of Outdoor DNL



Source: Wyle Laboratories, "Community Noise," prepared for the U.S. Environmental Protection Agency, Office of Noise Abatement and Control, Washington, D.C., December 1971, pg. 63

Prior Terminal Studies

This section provides a summary of prior noise studies Massport has conducted of ground operations at and around Logan Airport's Terminal A and the effects on the adjacent Jeffries Point neighborhood.

Two studies were conducted that included the modeling of aircraft taxi and gate operations noise levels and the evaluation of noise abatement by barriers and/or buildings along Jeffries Cove. The first study was conducted in 1981, and assessed a proposed commuter pier for Terminal A, which was then occupied by Eastern Air Lines. That study evaluated the proposed commuter pier with and without the anticipated "Bird Island Flats Development" which was planned to include a 40-foot high solid structure along Jeffries Cove to act as a noise barrier for taxi and gate operations at Terminals A and B as well as activities at the jet cargo facilities planned in the Bird Island Flats area, south of the two terminals.



The second study, "Terminal A Replacement," conducted in 1993, evaluated the noise effects and benefits of replacing Terminal A with a building or buildings that would include a long, continuous airside concourse building along Harborside Drive parallel to the Logan Office Center. This was expected to provide additional shielding of noise from taxi and gate operations activities at Terminals A and B.

Both studies evaluated the A-weighted hourly equivalent sound levels (LAeq(1h)), the maximum sound levels from single events and the number of those events during the daytime and nighttime periods. With this, both studies used the best available aircraft noise emission level information as well as the most appropriate sound-propagation models available during the study period to compute the overall sound levels and the benefits of the shielding provided by structures. In both studies, those models were the current approved Federal Highway Administration traffic noise models. The models were modified slightly in order to properly account for the different sound spectra of aircraft noise sources and for the appropriate heights of the engine noise sources for the different aircraft types using the taxiways, apron and terminals at the time.

1981 Terminal A Noise Study

The 1981 study found that the average hourly equivalent sound levels from Eastern Air Lines ground operations would be reduced by the presence of a 40-foot high building or barrier structure in the amounts of 7 to 8 dB at the 3rd and 1st floors of the residences in McCormack Square, and by 12 dB at both floors of the Jeffries Point Yacht Club as compared with the projected future no-build condition. The study also found that single-event maximum sound levels would be reduced by an average of approximately 10 dB at McCormack Square, 3rd floor due to the presence of a 40-foot high structure.

1993 Terminal A Noise Study

The 1993 study evaluated the expected changes in average and single-event noise levels in connection with a new concept for Terminal A, which included the proposed airside concourse. The additional noise reduction benefit of the new terminal concept was expected to be 3 to 4 dB in average daytime hourly equivalent sound levels from taxi and gate operations as heard in the Jeffries Point community, as compared with the projected future no-build condition (which included the Logan Office Center building). Therefore, the total expected noise reduction of the combined Logan Office Center and new Terminal A airside concourse would increase to 15 dB at the Jeffries Point Yacht Club and 10 to 11 dB at the McCormack Square residences. In addition, maximum sound levels generated by single events occurring near the proposed airside concourse were predicted to be attenuated by up to 20 dBA by the combined structures. The analysis incorporated contemporary mathematical algorithms for modeling of the effects of sound diffraction over the two buildings. The study concluded that the expected future average hourly daytime ground operations noise levels with the two buildings in place would be 52 dBA, Leq, which would be 5 dB lower than the existing daytime background Leq of 57 dBA.



Noise Measurements

This section summarizes the noise measurement program conducted for the Terminal E Modernization Project. The following sections summarize the measurement program objectives, the measurement program design and execution and the presentation of site-by-site single event and cumulative exposure results.

Measurement Program Objectives

The purpose of the measurement program is to collect information to develop and validate the computerized noise prediction model (SoundPLAN) being used to compute annual average daily gate operations noise levels under existing, future No-Action Alternative, and future Proposed Action conditions.

The following primary objectives were identified:

- Understanding noise-producing aircraft operations in the Terminal E gate area;
- Illustrating the effect of existing operations;
- Identifying noise levels from specific types of events from specific aircraft and ground service equipment such as auxiliary power units;
- Sampling cumulative noise exposure over multiple days at three locations; and
- Model how gate operations noise from the apron area propagates into the surrounding community.

Measurement Program Design and Execution

To accomplish the measurement objectives, noise measurements were conducted from August 25 through 27, 2015, at three locations, shown on **Figure D-12**.

Measurement Site Selection

Massport selected two attended noise monitoring locations, one in the Bremen Street Park and one in the East Boston Memorial Park, to represent the nearby residential areas. The identified measurement sites are both adjacent to the closest residential communities in East Boston that could be affected by Terminal E gate operations. A site on the roof of the Economy Garage was also selected for observation and measurement of the activity on the ramp during the community measurements.





Figure D-12: Locations of Noise Measurement Sites



Description of Site 1 - Roof of Economy Garage

Site 1 is located at the southwest edge of the top floor of the Economy Parking Garage. It provides a suitable vantage point for observing the activity on the apron during the measurement period and as well as measuring noise levels. **Figure D-13** shows an image from Site 1, looking toward Site 2 (behind the Delta Airlines Hangar). Terminal E is to the left of the image. Aircraft noise sources at Site 1 were primarily from the North Apron and the General Aviation ramp nearby. Primary noise sources included aircraft taxiing on the North Apron, aircraft running auxiliary power units and miscellaneous ground support equipment on the North Apron and aircraft operations on Runway 15R, particularly jet departures. Other noise sources included construction noise from the demolition of a hangar on the southwest side of the North Apron, cargo equipment usage, and occasional helicopter traffic. It is worth noting that most aircraft entering or exiting the North Apron were being towed, and extended periods of auxiliary power unit/ground support equipment usage were common. UPS cargo operations are also seen from this monitor location. The UPS facility is to the left of the Delta Airlines Hangar.

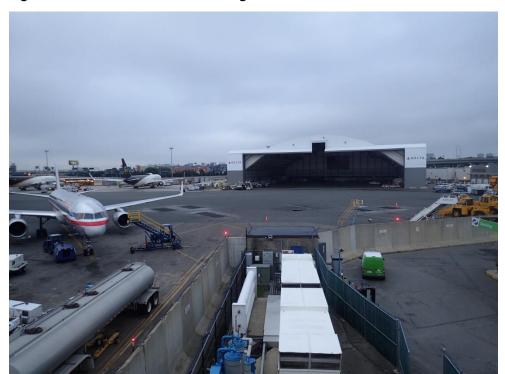
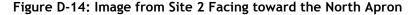


Figure D-13: View from Site 1 Looking Toward Site 2



Description of Site 2 - East Boston Memorial Park

Site 2 is located in East Boston Memorial Park, and was selected to represent the nearby residential community starting at Porter Street and continuing to the southwest. The park contains multiple sports fields, including a large turf field, a stadium with track, and multiple baseball fields. The East Boston Expressway runs along the north side of the park, and the Massachusetts Turnpike (Interstate 90) separates Site 2 from the North Apron on the east side of the park. **Figure D-14** shows the microphone setup at Site 2, looking toward the North Apron area. In the image, the rear of the Delta Airlines Hangar is visible across Interstate 90. Numerous noise events were recorded from vehicular traffic on the two intersecting highways, particularly large trucks with air brakes. There is also an above-ground Massachusetts Bay Transportation Authority (MBTA) Blue Line train track adjacent to the park along the northwest edge. The MBTA Airport Station is located at the northern corner of the park. Many of the events recorded were from the train arriving or departing Airport Station. In addition, this section of the park gets particularly busy with soccer practices during evening hours. Thus, the noise monitor needed to be moved several times, as people encroached.







Description of Site 3 - Bremen Street Park

Site 3 is located in Bremen Street Park, and was selected to represent the nearby residential community starting on Bremen Street and continuing to north and northwest. Bremen Street Park contains a large playground and fountain, attracting many children during the daytime hours. During the day, most of the ambient noise comes from children playing and nearby road traffic. As with Site 2, many noise events were caused by intersecting highways (East Boston Expressway and Massachusetts Turnpike), particularly large trucks. The MBTA Blue Line train track and Airport Station are both adjacent along the southeast side of the park, and were the sources of many recorded noise events. The noise monitor at Site 3 was position to the northeast of the central playground, in a part of the park that had some visibility to the North Apron. **Figure D-15** shows the noise monitor at Site 3, facing toward the North Apron. In the image, the tails of two aircraft are visible underneath the highway overpass.







Measurement Procedures and Equipment

Two days of monitoring were devoted to measuring ground noise from Terminal E and the North Apron in the community. Observations were made on the first day, August 25, 2015, from mid-day until twilight and on the second day, August 26, 2015, from dawn until mid-day. Observers in the two residential locations logged all audible sounds while the RION3 noise monitors collected full time histories of the sound levels at the sites. All noise monitors were Type I precision sound level meters and were calibrated before and after each measurement session.

Simultaneously, an observer on the roof of the Economy Parking Garage structure visually identified noise sources in the North Cargo Area. A noise monitor at this site also collected a full time history of sound levels for use in this analysis.

On August 27, 2015 two observers were escorted on the North Apron to collect source sound levels for the noise model at close distances. Several aircraft auxiliary power units and aircraft taxi pass-bys, several GPUs, and a preconditioned air unit were measured. These "close-in" measurements are valuable for determining noise levels from aircraft taxi, gate maneuvering, and auxiliary power units operations from various aircraft types and are used in the noise model to characterize the overall sound level, frequency spectrum, and directivity of the observed sound sources.

Table D-1: Summary of Noise Measurement Durations, August 25-27, 2015

Manitan Lagation -	Community Noise M	easurements (Hours)	Source Level Measurements (Hours)	Total
Monitor Location -	Day 1 (8/25/2015)	Day 2 (8/26/2015)	Day 3 (8/27/2015)	(Hours)
Site 1 – Economy Garage	7	8		15
Site 2 – EB Memorial	7	8		15
Stadium				
Site 3 - Bremen Street	7.5	8		15.5
Park				
North Apron			6	6

³ RION NL-32 Type 1 Meters were used



Results

From Site 1, apart from cargo aircraft, all aircraft on the North Apron were under tow when moving, typically with only their auxiliary power unit running. These aircraft were rarely audible above the ambient background in the two community locations. Other noise sources on the ramp included ground power units and ground support vehicles. Ground noise from aircraft at Terminal E was inaudible or nearly so even at the economy parking structure.

During the two days of community noise measurements (August, 25 2015 to August, 26 2015) aircraft-related ground noise was only occasionally audible and when audible, it was often not the loudest noise source. Non-aircraft noise sources at Site 2 and Site 3, such as traffic, trains, and recreational activity, often dominated the noise environments. The largest sources of non-aircraft noise at both sites were the intersecting raised highways and the MBTA train track and station. Noise produced from community members using each respective park was also a dominant noise source during certain times of the day.

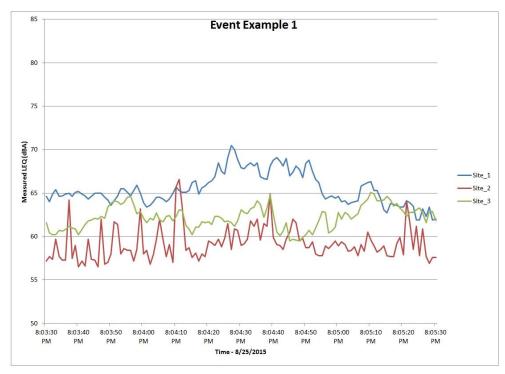
Single Event Examples

Figures D-16 and **D-17** present two examples of noise events that have some (though weak) correlation between Site 1 and the other two sites. Aircraft ground noise events that were easily audible at Site 1 were rarely audible at Sites 2 and 3 due. The noise at these sites was dominated by other noise sources. Therefore, a significant correlation among the three sites was not observed over the course of the measurement period.

Event example 1 (shown on **Figure D-16**) presents the measured data at each site for a noise event occurring around 8:04 PM on August 25, 2015. Logs from the measurement team at Site 1 indicate that this noise event was caused by an aircraft on the North Apron being towed from the ramp. The auxiliary power unit on the aircraft had been running for approximately one hour without being noted by the observers at either community site prior to this noise event. During this event, a Boeing 767-300 with its auxiliary power unit running was pushed back by a tug and then towed toward Terminal E. Auxiliary power unit noise was noted at Site 3, but no aircraft noise was noted at Site 2.



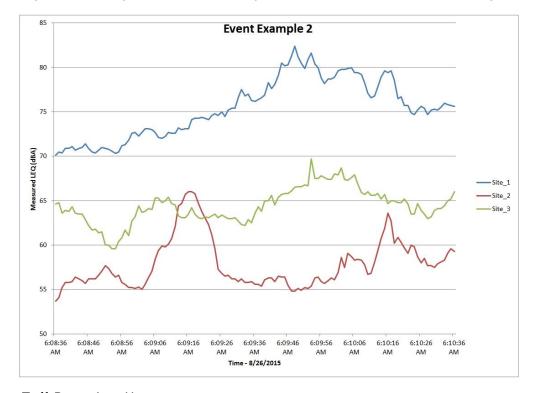
Figure D-16: Single Noise Event Example, Boeing 767-300 Under Tow with Auxiliary Power Unit On August, 25 2015



Event example 2 (shown on **Figure D-17**) presents the measured data at each site for a noise event occurring around 6:10 AM on August 26, 2015. Logs from the observer at Site 1 indicate that the noise event was caused by two aircraft. One aircraft started its auxiliary power unit and another was taxiing into the North Apron under its own power (no tug). The aircraft noise was noted at both Site 2 and Site 3, although the measured correlation is stronger at Site 3. Two separate train events were recorded at Site 2 on either side of the aircraft noise event (see local maximums at 6:09:15 and 6:10:15 AM). At Site 3, some aircraft movement was visible. This direct line-of-sight likely increases the correlation between Site 1 and Site 3.



Figure D-17: Single Noise Event Example Measured at All Three Sites on August, 26 2015



Full Duration Measurements

The following figures provide all of the measurement data collected during each day of measurements. The data for all three sites is shown on each figure so that the data can be compared. **Figure D-18** presents the measured noise levels at each site for the full duration of measurements on August 25, 2015 from approximately 1:00 PM to 8:30 PM. **Figure D-19** presents the measured noise levels at each site for the full duration of measurements on August 26, 2015 from approximately 6:00 AM to 2:00 PM. The empty spaces in the middle of each measurement period were lunch and dinner breaks for the measurement team.

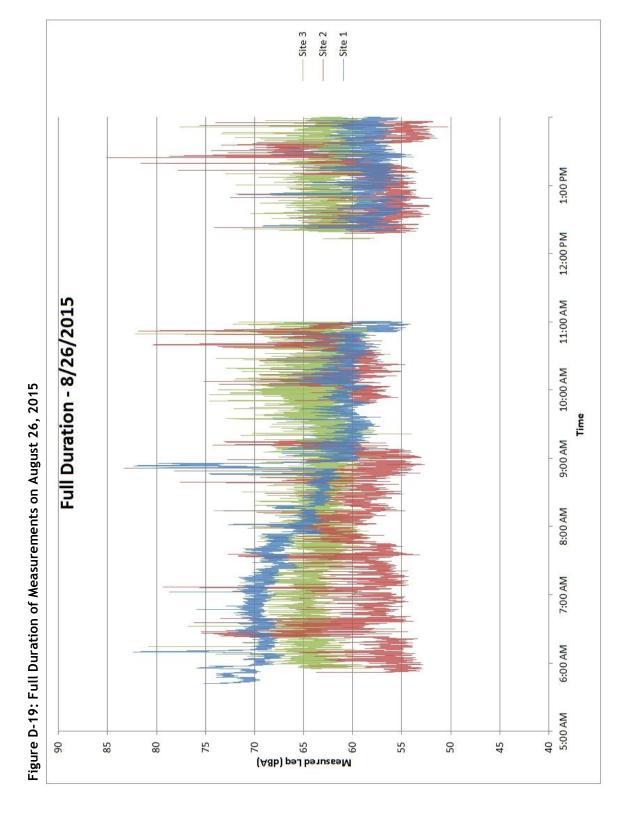
Note that Site 1 is much closer to the aircraft ground noise sources than Sites 2 and 3. Therefore, the levels of aircraft ground noise at Sites 2 and 3 are much lower than at Site 1. With this in mind, examination of the sound level data in **Figures D-18** and **D-19** yields several conclusions:

- The noise levels at Sites 2 and 3 are often higher than the noise level at Site 1. This indicates that there are other sources of noise which are dominant during these periods and that aircraft ground noise at these locations is much lower than the ambient.
- Large changes in the sound level at Site 1 due to the start and end of aircraft ground activity are not mirrored by changes in the overall sound level at Sites 2 and 3. Again, this indicates that aircraft ground noise is only a small component of the total noise at these sites.



Site 3 Site 2 Site 1 8:30 PM 7:30 PM 6:30 PM Full Duration - 8/25/2015 5:30 PM Figure D-18: Full Duration of Measurements on August 25, 2015 Time 4:30 PM 3:30 PM 2:30 PM 1:30 PM 40 12:30 PM (A&b) ped Lea (A&b) S S S 90 75 85 80 22 20 45







Noise Modeling Methodology



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TECHNICAL MEMORANDUM

To: Stewart Dalzell, Deputy Director

Environmental Planning and Permitting

Massport

sdalzell@massport.com

From: Robert Mentzer Jr, HMMH

Brad Nicholas, HMMH

Date: January 15, 2016

Subject: Modeling Methodology for Logan International Airport Terminal E

Modernization Environmental Assessment

Reference: HMMH Project 307720

1. BACKGROUND

On behalf of Massport, Harris Miller Miller & Hanson Inc. d/b/a HMMH is evaluating the current and future ground noise levels associated with the North Cargo Ramp/Terminal E area at Logan International Airport (BOS). This analysis is part of an Environmental Assessment (EA) and Massachusetts Environmental Impact Report (EIR) for the proposed project. Massport proposes to extend Terminal E along the North Ramp area and add additional gates. The additional gates will be closer to East Boston neighborhoods, however the Terminal building is being designed to also act as a noise barrier to the community. This memorandum describes the proposed noise modeling methodology used in this study to assess the potential noise reduction benefits of the Terminal E building improvements for aircraft ground noise.

2. STATEMENT OF BENEFIT

HMMH recommends the use of the SoundPLAN* model*, combined with field evaluation through on-site noise measurements, to perform the acoustical modeling for this project. The SoundPLAN* computer model is a widely accepted tool for computing outdoor sound levels associated with ground-based noise sources. SoundPLAN* computes sound levels at a distance from a specific noise source, or sources, taking into account:

- Specific characteristics of each noise source including its frequency spectrum and directivity characteristics.
- Terrain features including elevations of noise sources, receivers, and intervening objects.
- Ground effects due to areas of pavement, unpaved ground, and water.

SoundPLAN Version 7.4 is the current release. Documentation provided in SoundPLAN User's Manual, Braunstein + Berndt GmbH, 2015. U.S. sales and support services are available via Navcon Engineering Network, Fullerton, CA(http://navcon.com/www/sumpage/software/soundplan)





HMMH

Modeling Methodology for Logan International Airport Terminal E Environmental Assessment January 15, 2016 Page 2

- Shielding and reflections due to intervening buildings or other structures, including diffracted paths around and over structures.
- Atmospheric effects on sound propagation.

SoundPLAN includes several different methods of accounting for the above effects on sound propagation. For this evaluation, we propose to use the model's implementation of the General Prediction Method (GPM). The GPM has been established as an official outdoor sound propagation standard in all of the Scandinavian countries and Austria. Originally developed for industrial noise sources, the GPM also is well-suited for the evaluation of ground-based aircraft noise sources.



Because of the features described above, the SoundPLAN* model is more appropriate for evaluation of aircraft ground operations than the FAA's Integrated Noise Model (INM) or Aviation Environmental Design Tool (AEDT), which are intended primarily for the evaluation of aircraft flight operations. While INM or AEDT can be used to model ground-based aircraft operations, they are not intended primarily for this purpose and provide less precise results than specialized models such as SoundPLAN*. In addition, unlike SoundPLAN*, INM andAEDT are not intended to be used as a noise barrier design tool.

For studies which focus on ground noise, the FAA has recognized that it is necessary to use a model which can account for the shielding effects of buildings, barriers, and terrain.

Thus, historical FAA policy has been that the effectiveness of noise barriers are evaluated with separate models than those used for 14 CFR Part 150 studies and with different noise metrics. SoundPlan has been used in the past at Logan International Airport. It was used in a similar project for Terminal A to evaluate the effectiveness of noise reduction from proposed buildings and barriers and also for two taxiway noise studies.

OAL-Richtline nr 28 Schallabstrahlung und Schallausbreitung. Österreichischer Arbeitstring für Lärmbekämpfung, 1987 (Austrian Acoustical Society Report No. 28, "Sound Radiation and Sound Propagation."). The GPM's methodology for calculating sound propagation, including geometric dispersion from acoustical point sources, effects of areas of hard and soft ground, noise barrier diffraction mathematics, and assumptions regarding weather conditions, is similar to ISO Standard 9613-2 (ISO Standard 9613-2, "Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation," International Organization for Standardization, Geneva, 1996). ISO 9613-2 specifies use of "wind direction... with the wind blowing from the source to the receiver, and wind speed between approximately 1 m/s and 5 m/s ." The equations in the ISO Standard "also hold, equivalently, for average propagation under a welldeveloped moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights." Much like ISO 9613-2, the GPM assumes moderate downwind conditions and a neutral temperature gradient, and also would hold for calm wind with a temperature inversion. Although use of either Standard provides a conservatively high estimate of community sound levels caused by ground-based airport sources, ISO 9613-2 provides an overly conservative estimate of noise reduction provided by a berm or barrier, particularly in the presence of a long propagation path over acoustically soft ground. For similar geometries on several projects, we have found the GPM's predictions of barrier noise reduction to be more consistent with both our experience and with those of other highly-respected sound models such as the FHWA's Traffic Noise Model and Nord-2000. For this reason, we recommend use of the GPM for the current evaluation.



HMMH

Modeling Methodology for Logan International Airport Terminal E Environmental Assessment January 15, 2016 Page 3

3. METHODOLOGY

Although FAA Order 1050.1F³ requires the use of the day-night average sound level (DNL) metric to determine noise exposure and land use compatibility, ground-operations noise often makes little contribution to overall noise exposure caused by aircraft flight operations. In these cases, single-event noise metrics are helpful in evaluating the intrusiveness of events that might be overshadowed by flight operations when considered only with cumulative-exposure metrics such as DNI

In addition to evaluating changes to the DNL due to the proposed project, HMMH proposes to use the A-weighted maximum sound level (L_{max} , dBA) to demonstrate potential reductions in single event noise levels at various sites due to the proposed project.



The following provides our methodology:

- Development/Refinement of Noise Model for Study Area: Using the SoundPLAN* (Version 7.4), HMMH will constructed a computer model of relevant portions of the study area including topography, airfield pavement and buildings, significant structures on the airfield and in the community, and other factors influencing sound propagation from aircraft utilizing the North Ramp and Terminal E. HMMH will use detailed aircraft noise spectra and directivity collected on-site at BOS in 2015 and information on aircraft locations and orientations from field observations and Massport input.
- Noise Modeling Comparison: Using the SoundPLAN model described above, HMMH will compared the results of the noise modeling with single event sound levels measured in the community during two days of measurements in 2015. HMMH will fine-tune the noise model inputs to optimize the correlation between measured and modeled noise levels.
- Noise Reduction Evaluation: HMMH will evaluate the noise reduction benefits of the proposed project to the affected community. HMMH will provide estimates of reduction in single-event noise levels and DNL levels with and without the proposed project.

4. CONCLUSION

We believe the modeling methodology described above is consistent with FAA guidance and current best industry practices for assessing airport ground noise. If you have any questions, please do not hesitate to contact me at rmentzer@hmmh.com or bnicholas@hmmh.com or via phone at 781-229-0707.

³ U.S. Department of Transportation, Federal Aviation Administration, Office of Environment and Energy, Environmental Impacts: Policy and Procedures, FAA Order 1050.1F. July 16, 2015.



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Future Aircraft

The aircraft fleet expected to be in use at Terminal E in the future conditions represent several new and efficient models than are in the fleet today. The Airbus A380, the Boeing 747-800, Airbus A321neo and the Boeing 737-800 MAX all represent a new group of efficient and quieter aircraft. The B747-400 is a large wide-body aircraft produced in the 1990s and holds 400 to 500 passengers depending on the seating configuration. The A380 is a new wide-body double deck aircraft. It started passenger operations in 2007 and can hold 500 to 600 passengers depending on the seating configuration.

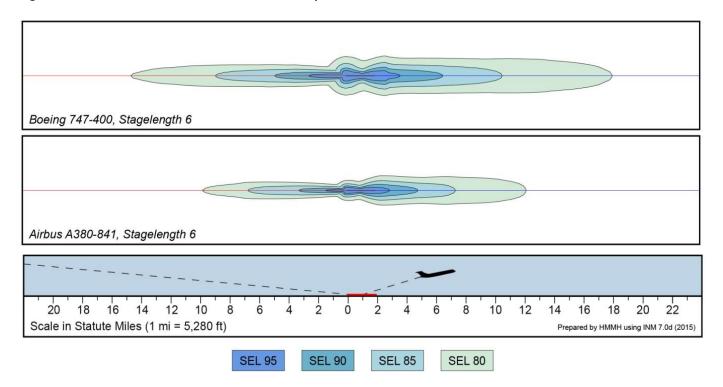
Single Event Graphics

SEL contours were developed using the FAA Integrated Noise Model (INM) using a 10,000-foot runway and Logan Airport annual weather conditions. These were developed for each route so that the aircraft Stagelength (which is a surrogate for weight) was included in the results. The SEL contour includes an arrival to the runway and a departure. The SEL contours used INM standard profiles for arrival and departure. For arrivals, most of the profiles include a level segment at 3,000 feet Above Field Elevation which is a typical average arrival profile at an airport.

Figure D-20 displays the SEL contours for the A380 and the B747-400. The A380 aircraft is quieter on approach and on departure compared to the current B747-400 aircraft affecting a smaller region around the airport with aircraft noise compared to existing conditions. The reductions also on sideline during takeoff will be a benefit to nearby communities to the Airport.



Figure D-20: A380 and B747-400 Arrival and Departure SEL Contour



Aircraft Comparison

The project compared noise certification data for various aircraft in today's fleet (Stage 3) to aircraft in the future fleet (Stage 4). The noise certification data is collected under specific conditions and at three measurement locations. Measurements are made under the approach, under the departure and to the sideline of the runway (Lateral). These levels are used to determine if an aircraft meets certain noise certification levels. All jet aircraft manufactured after December 31, 2005 must be shown to meet Stage 4 requirements.

Figure D-21 displays the certificated noise values in decibels for two Stage 3 aircraft and two Stage 4 aircraft. The four aircraft are the Boeing 747-400 and the 747-800 and the Airbus A330-343 and the recently certificated A350-900. The Stage 4 aircraft at all three locations are less than their Stage 3 counterparts.



Noise Levels 105 100 95 Decibels 90 85 80 75 Lateral Departure Arrival ■ B747-400 (Stage 3) ■ B747-8 (Stage 4) A330-343 (Stage 3) A350-900 (Stage 4)

Figure D-21: Comparison between Stage 3 and Stage 4 Aircraft

Future Conditions

The following sections provide detail input and modeling data for the future No-Action Alternative and Proposed Action conditions.

The 2030 DNL contour developed as part of the 2011 Environmental Status and Planning Report takes into account the increase in international flights and night operations. The 2030 operations modeled represented 160 night flights which is 28 more than occurred in 2014. The fleet mix also included newer aircraft similar to the fleet mix used in this analysis including the Airbus A350, Boeing 747-800, and Boeing 787. The runway use developed for the 2030 DNL contour was developed from airspace simulations using RNAV tracks, the 2030 fleet mix, and higher level of operations.⁴

No-Action Alternative

The future No-Action Alternative and overall operations and fleet mix are the same as the Proposed Action except for UPS cargo flights. The future No-Action Alternative includes the UPS cargo flights whereas in the Build condition these flights are moved to the South Cargo Area. How the aircraft use Terminal E and the North Cargo Area differs between each condition. **Table D-2** below provides the detailed breakdown of the No-Action Alternative flights and busing. The table provides the arrival time, departure time, parking locations and whether or not the passengers have to be bussed to and from the terminal. Under the No-Action Alternative 17 flights will need to use buses to move passengers to and from the terminal.

⁴ Massport. Boston-Logan International Airport 2011 Environmental Status and Planning Report, April 2013



Table D-2: No-Action Alternative Fleet Mix and Gate Assignments (Sorted by Arrival time)

Equipment	Arr Time	Gate/Spot (Area)	Dep Time	Gate/Spot (Area)	Busing
B-787-9	Overnight	E7	13:20	E7	
B-737-800	Overnight	E10	09:41	E10	
B-737-800	Overnight	NC-5 (A)	09:00	E6	
Q400	Overnight	E3	06:40	E3	
B-777-300ER	Overnight	E5	08:05	E5	
A306F	04:10	NC-17 (UPS)	07:15	NC-17 (UPS)	
7572F	05:00	NC-16 (C)	09:00	NC-16 (C)	
7630F	05:30	NC-18 (UPS)	22:15	NC-18 (UPS)	
B-787-8	05:30	E8	21:00	E8	
A306F	06:00	NC-17 (UPS)	22:25	NC-17 (UPS)	
B-777-300ER	06:00	E4	15:30	E4	
A-330-200	06:00	E12	19:00	E5	
A-320	06:10	E6	07:10	E6	
A-320	06:45	E1	07:30	To Terminal C	
A-330-300	07:15	E11	19:30	E7	
A-320	07:26	E3	08:10	To Terminal C	
A-320	07:50	E2	08:35	To Terminal C	
Q400	08:20	E4	09:05	E4	
B-777-300ER	08:55	E8	11:55	E8	
B-787-9	09:10	E11	14:40	E11	
B-777-300ER	09:30	E5	11:15	E5	
B-787-8	09:40	E6	11:40	E6	
B-777-300ER	10:15	E10	12:45	E10	
Q400	10:35	E3	11:20	E3	
B-787-9	11:30	E9	13:30	E9	
B-757-200WL	12:00	E1	14:35	E1	
B-787-9	12:18	E8	19:36	E9	
A-330-300	12:19	E5	13:25	To Terminal A	
A-330-200	12:30	E4	17:30	E4	
A-330-300	12:35	E6	13:30	To Terminal A	
B-757-200WL	12:45	E2	13:30	To Terminal B	
Q400	13:00	E3	13:45	E3	
A-380-800	13:30	E10	19:10	E10	
A-380-800	14:15	E12	23:15	E12	
A-330-300	14:30	E8	18:00	E8	
Q400	14:35	E3	15:20	E3	
B-787-8	14:35	E5	16:35	E5	
A-330-300	14:40	E7	17:40	E7	



Table D-2: No-Action Alternative Fleet Mix and Gate Assignments (Sorted by Arrival time)

Equipment	Arr Time	Gate/Spot (Area)	Dep Time	Gate/Spot (Area)	Busing
A-380-800	15:00	E11	17:00	E11	
A-350-900	15:05	E6	23:10	E8	
B-787-8	15:10	NC-5 (A)	17:10	NC-5 (A)	Yes
A-330-200	15:10	E9	17:35	E9	
A-330-300	15:20	E10	17:00	E10	
A-330-300	15:20	NC-6 (A)	17:30	NC-6 (A)	Yes
B-787-9	15:25	NC-20 (B)	21:35	NC-20 (B)	Yes
A-330-300	15:30	NC-7 (A)	17:50	NC-7 (A)	Yes
A-330-200	15:45	NC-8 (A)	17:30	NC-8 (A)	Yes
A-321	16:00	NC-16 (C)	18:00	NC-16 (C)	Yes
B-737-Max8	16:15	NC-19 (B)	18:00	NC-19 (B)	Yes
B-737-Max8	16:15	E1	18:00	E1	
B-737-Max8	16:15	E3	18:00	E3	
Q400	16:40	NC-9 (A)	17:25	NC-9 (A)	Yes
A-320	16:45	E2	17:30	To Terminal C	
A-330-300	16:52	E6	17:53	To Terminal A	
A-330-300	17:00	E12	22:15	E9	
A-321	17:30	NC-5 (A)	18:55	NC-5 (A)	Yes
Q400	18:05	NC-9 (A)	18:50	NC-9 (A)	Yes
B-787-9	18:05	E4	Overnight	Remain at NC-14 (D)	
B-737-Max8	18:15	NC-6 (A)	20:00	NC-6 (A)	Yes
B-777-300ER	18:15	NC-7 (A)	20:20	NC-7 (A)	Yes
B-777-300ER	18:15	NC-20 (B)	23:30	NC-20 (B)	Yes
A-320	18:15	E2	19:00	To Terminal C	
B-737-800	18:25	E8	Overnight	Terminal B	
B-757-200WL	18:35	NC-8 (A)	21:30	NC-8 (A)	Yes
A-330-300	18:40	E6	22:50	E6	
B-747-8	18:50	E12	20:35	E12	
B-737-Max8	19:05	E3	21:20	E3	
A-380-800	19:05	E11	21:35	E11	
B-757-200WL	19:15	E1	20:45	E1	
B-737-Max8	19:15	NC-5 (A)	21:20	NC-5 (A)	Yes
B-737-Max8	19:20	NC-19 (B)	21:30	NC-19 (B)	Yes
Q400	19:40	E4	20:25	E4	
B-747-8	19:50	E10	22:15	E10	
A-330-300	19:55	E7	21:45	E7	
B-777-300ER	20:40	E5	22:40	E5	
B-777-200LR	21:05	E4	22:50	E4	



Table D-2: No-Action Alternative Fleet Mix and Gate Assignments (Sorted by Arrival time)

Equipment	Arr Time	Gate/Spot (Area)	Dep Time	Gate/Spot (Area)	Busing
B-737-Max8	21:15	E2	22:30	E2	
B-777-300ER	22:00	NC-6 (A)	Overnight	Remain at Stand	Yes
Q400	22:00	E3	Overnight	Remain at gate	
B-777-300ER	22:00	E11	Overnight	Remain at gate	
A-319	22:00	E1	Overnight	Remain at gate	

Source: HMMH

Notes: E10 refers to Gate E10 at the terminal NC-6 (A) refers to stand location NC-6 in Area A

UPS flights are included in the No-Action Alternative

Proposed Action

The future Proposed Action and overall operations and fleet mix are the same as the No-Action Alternative except for the UPS cargo flights. The Proposed Action does not include UPS cargo flights since they have been moved to the South Cargo Area. How the aircraft use Terminal E and the North Cargo Area differs between each condition. **Table D-3** below provides the detailed breakdown of the Proposed Action flights and busing. The table provides the arrival time, departure time, parking locations and whether or not the passengers have to be bused to and from the terminal. Under the No-Action Alternative only one flight will need to use buses to move passengers to and from the terminal.

Table D-3: Proposed Action Fleet Mix and Gate Assignments (Sorted by Arrival time)

Equipment	Arr Time	Gate/Spot (Area)	Dep Time	Gate/Spot (Area)	Busing
B-787-9	Overnight	E7	13:20	E7	
B-737-800	Overnight	E18	09:41	E18	
B-737-800	Overnight	E19	09:00	E19	
Q400	Overnight	E3	06:40	E3	
B-777-300ER	Overnight	E5	08:05	E5	
B-787-8	05:30	E8	21:00	E8	
B-777-300ER	06:00	E9	15:30	E6	
A-330-200	06:00	E13	19:00	E13	
A-320	06:10	E6	07:10	E6	
A-320	06:45	E1	21:49	To Terminal C	
A-330-300	07:15	E14	19:30	E14	
A-320	07:26	E3	22:52	To Terminal C	
A-320	07:50	E2	17:00	To Terminal C	
Q400	08:20	E4	09:05	E4	
B-777-300ER	08:55	E14	11:55	E14	
B-787-9	09:10	E13	14:40	E13	
B-777-300ER	09:30	E5	11:15	E5	



Table D-3: Proposed Action Fleet Mix and Gate Assignments (Sorted by Arrival time)

Equipment	Arr Time	Gate/Spot (Area)	Dep Time	Gate/Spot (Area)	Busing
B-787-8	09:40	E6	11:40	E6	
B-777-300ER	10:15	E15	12:45	E15	
Q400	10:35	E3	11:20	E3	
B-787-9	11:30	E16	13:30	E16	
B-757-200WL	12:00	E1	14:35	E1	
B-787-9	12:18	E17	19:36	E6	
A-330-300	12:19	E5	19:18	To Terminal A	
A-330-200	12:30	E14	17:30	E6	
A-330-300	12:35	E6	19:27	To Terminal A	
B-757-200WL	12:45	E2	19:00	To Terminal B	
Q400	13:00	E3	13:45	E3	
A-380-800	13:30	E10	19:10	E10	
A-380-800	14:15	E12	23:15	E12	
A-330-300	14:30	E5	18:00	E5	
Q400	14:35	E3	15:20	E3	
B-787-8	14:35	E16	16:35	E16	
A-330-300	14:40	E7	17:40	E7	
A-380-800	15:00	E11	17:00	E11	
A-350-900	15:05	E15	23:10	E17	
B-787-8	15:10	E13	17:10	E13	
A-330-200	15:10	E17	17:35	E17	
A-330-300	15:20	E10	17:00	E10	
A-330-300	15:20	E8	17:30	E8	
B-787-9	15:25	E4	21:35	E4	
A-330-300	15:30	E9	17:50	E9	
A-330-200	15:45	E14	17:30	E14	
A-321	16:00	E18	18:00	E18	
B-737-Max8	16:15	E2	18:00	E2	
B-737-Max8	16:15	E12	18:00	E12	
B-737-Max8	16:15	E19	18:00	E19	
Q400	16:40	Near E1	17:25	Near E1	Yes
A-320	16:45	E3	Overnight	To Terminal C	
A-330-300	16:52	E15	Overnight	To Terminal A	
A-330-300	17:00	E16	22:15	E16	
A-321	17:30	E1	18:55	E1	
Q400	18:05	E4	18:50	E4	
B-787-9	18:05	E8	Overnight	Remain at Stand	
B-737-Max8	18:15	E7	20:00	E7	



Table D-3: Proposed Action Fleet Mix and Gate Assignments (Sorted by Arrival time)

Equipment	Arr Time	Gate/Spot (Area)	Dep Time	Gate/Spot (Area)	Busing
B-777-300ER	18:15	E9	20:20	E9	
B-777-300ER	18:15	E17	23:30	E7	
A-320	18:15	E3	Overnight	To Terminal C	
B-737-800	18:25	E18	Overnight	To Terminal B	
B-757-200WL	18:35	E19	21:30	E19	
A-330-300	18:40	E15	22:50	E15	
B-747-8	18:50	E12	20:35	E12	
B-737-Max8	19:05	E5	21:20	E5	
A-380-800	19:05	E11	21:35	E11	
B-757-200WL	19:15	E1	20:45	E1	
B-737-Max8	19:15	E2	21:20	E2	
B-737-Max8	19:20	E13	21:30	E13	
Q400	19:40	E3	20:25	E3	
B-747-8	19:50	E10	22:15	E10	
A-330-300	19:55	E14	21:45	E14	
B-777-300ER	20:40	E9	22:40	E9	
B-777-200LR	21:05	E6	22:50	E6	
B-737-Max8	21:15	E18	22:30	E18	
B-777-300ER	22:00	E5	Overnight	Remain at gate	
Q400	22:00	E3	Overnight	Remain at gate	
B-777-300ER	22:00	E13	Overnight	Remain at gate	
A-319	22:00	E19	Overnight	Remain at gate	

Source: HMMH

Notes: E10 refers to Gate E10 at the terminal UPS flights are not included in the Proposed Action

Appendix E Surface Transportation Technical Appendix

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Appendix E

Surface Transportation Technical Appendix

Traffic Count Data

- ATR Data
- TMC Data

Curbside Operations Analysis

Existing Conditions

Roadway Merge, Diverge, and Weave Analysis

Existing Conditions

Intersection Capacity Analyses

Existing Conditions

Public Transit Services

Curbside Operations Analysis

- No Build/No Action (existing parking freeze remains)
- Preferred Alternative (existing parking freeze remains)
- Preferred Alternative (additional 5,000 on-Airport parking spaces)

Roadway Merge, Diverge, and Weave Analysis

- No Build/No Action (existing parking freeze remains)
- Preferred Alternative (existing parking freeze remains)
- Preferred Alternative (additional 5,000 on-Airport parking spaces)

Intersection Capacity Analyses

- No Build/No Action (existing parking freeze remains)
- Preferred Alternative (existing parking freeze remains)
- Preferred Alternative (additional 5,000 on-Airport parking spaces)

Surface Transportation Figures (Chapters 4 and 5 of the EA/DEIR)

■ Figure E-1: August 2015 Arrivals Level – Peak Hour Traffic Volumes

- Figure E-2: August 2015 Departures Level Peak Hour Traffic Volumes
- Figure E-3: 2015 Evening Peak Hour Traffic Volumes
- Figure E-4: 2015 Sunday Peak Hour Traffic Volumes
- Figure E-5: No-Action Alternative (Existing Parking Freeze Remains) Evening Peak Hour Traffic Volumes
- Figure E-6: No-Action Alternative (Existing Parking Freeze Remains) Sunday Peak Hour Traffic Volumes
- Figure E-7: Proposed Action (Existing Parking Freeze Remains) Evening Peak Hour Traffic Volumes
- Figure E-8: Proposed Action (Existing Parking Freeze Remains) Sunday Peak Hour Traffic Volumes
- Figure E-9: No-Action Alternative (Existing Parking Freeze Remains) Arrivals Level Peak Hour Traffic Volumes
- Figure E-10: No-Action Alternative (Existing Parking Freeze Remains) Departures Level Peak Hour Traffic Volumes
- Figure E-11: Proposed Action (Existing Parking Freeze Remains) Arrivals Level Peak Hour Traffic Volumes
- Figure E-12: Proposed Action (Existing Parking Freeze Remains) – Departures Level Peak Hour Traffic Volumes
- Figure E-13: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Evening Peak Hour Traffic Volumes
- Figure E-14: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Sunday Peak Hour Traffic Volumes
- Figure E-15: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Arrivals Level Peak Hour Traffic Volumes
- Figure E-16: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Departure Level Peak Hour Traffic Volumes

Traffic Count Data

- ATR Data
- TMC Data

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City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name: 154582 AA Site Code: 13220.00 Start Date: 8/16/2015

							Elliali. ua	tarequests	pullic.com								
						Gro	ups Printe	ed- Cars -	Heavy Ve	hicles							
	Ga	s Station	Drivewa	y	Arriva	als Level S		oad	•	Terminal E	E Lot 2		Arriva	als Level S	Service R	oad	
		From N				From I				From Se				From \			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
05:00 PM	12	0	3	0	2	29	4	0	0	0	2	0	0	22	7	0	81
05:15 PM	14	0	9	0	1	36	5	0	0	0	0	0	1	26	5	0	97
05:30 PM	15	0	4	1	4	26	5	0	0	0	0	0	5	20	9	0	89
05:45 PM	23	0	8	0	3	30	9	0	0	0	0	0	4	32	4	0	113
Total	64	0	24	1	10	121	23	0	0	0	2	0	10	100	25	0	380
06:00 PM	18	0	11	0	7	35	6	0	0	0	0	0	4	27	8	1	117
06:15 PM	17	0	4	0	8	34	7	1	0	0	0	0	1	30	14	0	116
06:30 PM	8	1	7	0	4	30	4	0	0	0	0	0	6	34	12	0	106
06:45 PM	17	0	2	0	2	21	6	0	0	0	0	0	5	36	6	0	95
Total	60	1	24	0	21	120	23	1	0	0	0	0	16	127	40	1	434
				·								·				·	
Grand Total	124	1	48	1	31	241	46	1	0	0	2	0	26	227	65	1	814
Apprch %	71.3	0.6	27.6	0.6	9.7	75.5	14.4	0.3	0	0	100	0	8.2	71.2	20.4	0.3	
Total %	15.2	0.1	5.9	0.1	3.8	29.6	5.7	0.1	0	0	0.2	0	3.2	27.9	8	0.1	
Cars	122	1	48	1	31	135	46	1	0	0	2	0	26	224	64	1	702
% Cars	98.4	100	100	100	100	56	100	100	0	0	100	0	100	98.7	98.5	100	86.2
Heavy Vehicles	2	0	0	0	0	106	0	0	0	0	0	0	0	3	1	0	112
% Heavy Vehicles	1.6	0	0	0	0	44	0	0	0	0	0	0	0	1.3	1.5	0	13.8

			ation D	riveway rth		А		evel Se rom Ea	rvice Ro	ad			minal E rom Soi			A		evel Se	rvice Ro	oad	
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	or Entire	e Inter	sectior	n Begir	ns at 05:	:45 PM															
05:45 PM	23	0	8	0	31	3	30	9	0	42	0	0	0	0	0	4	32	4	0	40	113
06:00 PM	18	0	11	0	29	7	35	6	0	48	0	0	0	0	0	4	27	8	1	40	117
06:15 PM	17	0	4	0	21	8	34	7	1	50	0	0	0	0	0	1	30	14	0	45	116
06:30 PM	8	1	7	0	16	4	30	4	0	38	0	0	0	0	0	6	34	12	0	52	106
Total Volume	66	1	30	0	97	22	129	26	1	178	0	0	0	0	0	15	123	38	1	177	452
% App. Total	68	1	30.9	0		12.4	72.5	14.6	0.6		0	0	0	0		8.5	69.5	21.5	0.6		
PHF	.717	.250	.682	.000	.782	.688	.921	.722	.250	.890	.000	.000	.000	.000	.000	.625	.904	.679	.250	.851	.966
Cars	65	1	30	0	96	22	77	26	1	126	0	0	0	0	0	15	122	37	1	175	397
% Cars	98.5	100	100	0	99.0	100	59.7	100	100	70.8	0	0	0	0	0	100	99.2	97.4	100	98.9	87.8
Heavy Vehicles	1	0	0	0	1	0	52	0	0	52	0	0	0	0	0	0	1	1	0	2	55
% Heavy Vehicles	1.5	0	0	0	1.0	0	40.3	0	0	29.2	0	0	0	0	0	0	8.0	2.6	0	1.1	12.2



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Groups Printed- Cars File Name: 154582 AA Site Code: 13220.00 Start Date: 8/16/2015

							Grot	ups Printe	d- Cars								
	Ga	s Station		y	Arriva	als Level S		oad		Terminal I			Arriva	als Level		Road	
		From N				From I				From S				From \			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
05:00 PM	12	0	3	0	2	14	4	0	0	0	2	0	0	22	7	0	66
05:15 PM	14	0	9	0	1	22	5	0	0	0	0	0	1	26	5	0	83
05:30 PM	14	0	4	1	4	12	5	0	0	0	0	0	5	20	9	0	74
05:45 PM	23	0	8	0	3	17	9	0	0	0	0	0	4	31	3	0	98
Total	63	0	24	1	10	65	23	0	0	0	2	0	10	99	24	0	321
06:00 PM	18	0	11	0	7	23	6	0	0	0	0	0	4	27	8	1	105
06:15 PM	17	0	4	0	8	20	7	1	0	0	0	0	1	30	14	0	102
06:30 PM	7	1	7	0	4	17	4	0	0	0	0	0	6	34	12	0	92
06:45 PM	17	0	2	0	2	10	6	0	0	0	0	0	5	34	6	0	82
Total	59	1	24	0	21	70	23	1	0	0	0	0	16	125	40	1	381
Grand Total	122	1	48	1	31	135	46	1	0	0	2	0	26	224	64	1	702
Apprch %	70.9	0.6	27.9	0.6	14.6	63.4	21.6	0.5	0	0	100	0	8.3	71.1	20.3	0.3	
Total %	17.4	0.1	6.8	0.1	4.4	19.2	6.6	0.1	0	0	0.3	0	3.7	31.9	9.1	0.1	

			tation D	riveway rth		Α		evel Se	rvice Ro	oad			minal E rom So			Α		evel Se	ervice Ro	oad	
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	r Entire	e Inter	sectior	n Begir	ıs at 05:	:45 PM															
05:45 PM	23	0	8	0	31	3	17	9	0	29	0	0	0	0	0	4	31	3	0	38	98
06:00 PM	18	0	11	0	29	7	23	6	0	36	0	0	0	0	0	4	27	8	1	40	105
06:15 PM	17	0	4	0	21	8	20	7	1	36	0	0	0	0	0	1	30	14	0	45	102
06:30 PM	7	1	7	0	15	4	17	4	0	25	0	0	0	0	0	6	34	12	0	52	92
Total Volume	65	1	30	0	96	22	77	26	1	126	0	0	0	0	0	15	122	37	1	175	397
% App. Total	67.7	1	31.2	0		17.5	61.1	20.6	0.8		0	0	0	0		8.6	69.7	21.1	0.6		
PHF	.707	.250	.682	.000	.774	.688	.837	.722	.250	.875	.000	.000	.000	.000	.000	.625	.897	.661	.250	.841	.945



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name : 154582 AA Site Code : 13220.00 Start Date : 8/16/2015

									avy Vehicl	es							
	Ga	s Station I		y	Arriva	als Level S	ervice R	oad		Terminal E	E Lot 2		Arriva	als Level S	Service R	oad	
		From No				From E				From So				From V			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
05:00 PM	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	15
05:15 PM	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	14
05:30 PM	1	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	15
05:45 PM	0	0	0	0	0	13	0	0	0	0	0	0	0	1	1	0	15
Total	1	0	0	0	0	56	0	0	0	0	0	0	0	1	1	0	59
06:00 PM	0	0	0	0	0	12	0	0	0	0	0	0	0	0	0	0	12
06:15 PM	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	14
06:30 PM	1	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	14
06:45 PM	0	0	0	0	0	11	0	0	0	0	0	0	0	2	0	0	13
Total	1	0	0	0	0	50	0	0	0	0	0	0	0	2	0	0	53
Grand Total	2	0	0	0	0	106	0	0	0	0	0	0	0	3	1	0	112
Apprch %	100	0	0	0	0	100	0	0	0	0	0	0	0	75	25	0	
Total %	1.8	0	0	0	0	94.6	0	0	0	0	0	0	0	2.7	0.9	0	

			ation D			A		evel Se	rvice Ro	oad			minal E			Aı		evel Se	rvice Ro	oad	
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	or Entire	e Inters	sectior	n Begir	ns at 05:	:00 PM															
05:00 PM	0	0	0	0	0	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	15
05:15 PM	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	14
05:30 PM	1	0	0	0	1	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	15
05:45 PM	0	0	0	0	0	0	13	0	0	13	0	0	0	0	0	0	1	1	0	2	15
Total Volume	1	0	0	0	1	0	56	0	0	56	0	0	0	0	0	0	1	1	0	2	59
% App. Total	100	0	0	0		0	100	0	0		0	0	0	0		0	50	50	0		
PHF	.250	.000	.000	.000	.250	.000	.933	.000	.000	.933	.000	.000	.000	.000	.000	.000	.250	.250	.000	.250	.983



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name: 154582 AA Site Code: 13220.00 Start Date: 8/16/2015

								Gr	oups Pr	inted- P	eds and	Bikes									_
				iveway		Ar			vice Roa	ad			ninal E I			Ar	rivals L			ad	
		Fr	om Nor	th			F	rom Eas	st			Fr	om Sou	th			F	rom Wes	st		
Start	Right	Thru	Left	Peds EB	Peds WB	Right	Thru	Left	Peds SB	Peds NB	Right	Thru	Left	Peds WB	Peds EB	Right	Thru	Left	Peds NB	Peds SB	Int. Total
Time	Right	IIIIu	Leit	Peus EB	Peas WB	Rigit	Tillu	Len	Peus SB	Peds NB	IXIGIII	IIIIu	Len	Peds WB	Peus EB	Rigiti	IIIIu	Leit	Peds NB	Peus SB	III. Total
05:00 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	0	0	0	0	0	0	0	0	2	6	0	0	0	1	0	0	0	0	1	0	10
05:45 PM	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	4
Total	0	0	0	0	0	0	0	0	3	14	0	0	0	1	0	0	0	0	1	0	19
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	ő	0	0	0	0	Ö	ő	0	0	0	Ö	0	Ö	Ő	0	0	0
06:30 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
06:45 PM	Ö	0	0	0	Ō	0	Ō	0	Ö	0	Ö	0	0	0	Ō	Ō	Ō	Ō	0	0	0
Total	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	1	0	0	0	0	3	14	0	0	0	1	0	0	0	0	1	0	20
Apprch %	0	0	0	100	0	0	0	0	17.6	82.4	0	0	0	100	0	0	0	0	100	0	
Total %	0	0	0	5	0	0	0	0	15	70	0	0	0	5	0	0	0	0	5	0	

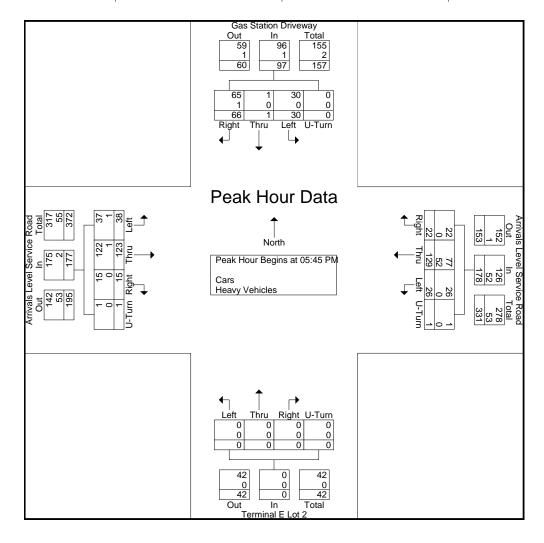
		Gas	Statio					Arrival			ce Roa	d		Т		al E Lo				Arrival			ce Roa	d	1
			From	North					Fron	n East					From	South					From	West			L
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour An	alysis F	rom 05	:00 PM	to 06:4	15 PM -	Peak 1	of 1				,						•								
Peak Hour	for E	ntire li	nterse	ection	Begir	ns at 05	5:00 F	PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	0	0	0	0	0	0	0	4
05:30 PM	0	0	0	0	0	0	0	0	0	2	6	8	0	0	0	1	0	1	0	0	0	1	0	1	10
05:45 PM	0	0	0	0	0	0	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	4
Total Volume	0	0	0	0	0	0	0	0	0	3	14	17	0	0	0	1	0	1	0	0	0	1	0	1	19
% App. Total	0	0	0	0	0		0	0	0	17.6	82.4		0	0	0	100	0		0	0	0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.375	.583	.531	.000	.000	.000	.250	.000	.250	.000	.000	.000	.250	.000	.250	.475



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name : 154582 AA Site Code : 13220.00 Start Date : 8/16/2015

		Gas St	tation D	riveway		Α	rrivals L	evel Se	rvice Ro	oad		Teri	ninal E	Lot 2		Α	rrivals L	evel Se	rvice Ro	oad	
		F	rom No	rth			F	rom Ea	st			F	rom So	uth			F	rom We	est		
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	or Entire	e Inter	section	n Begin	s at 05:	45 PM															
05:45 PM	23	0	8	0	31	3	30	9	0	42	0	0	0	0	0	4	32	4	0	40	113
06:00 PM	18	0	11	0	29	7	35	6	0	48	0	0	0	0	0	4	27	8	1	40	117
06:15 PM	17	0	4	0	21	8	34	7	1	50	0	0	0	0	0	1	30	14	0	45	116
06:30 PM	8	1	7	0	16	4	30	4	0	38	0	0	0	0	0	6	34	12	0	52	106
Total Volume	66	1	30	0	97	22	129	26	1	178	0	0	0	0	0	15	123	38	1	177	452
% App. Total	68	1	30.9	0		12.4	72.5	14.6	0.6		0	0	0	0		8.5	69.5	21.5	0.6		
PHF	.717	.250	.682	.000	.782	.688	.921	.722	.250	.890	.000	.000	.000	.000	.000	.625	.904	.679	.250	.851	.966
Cars	65	1	30	0	96	22	77	26	1	126	0	0	0	0	0	15	122	37	1	175	397
% Cars	98.5	100	100	0	99.0	100	59.7	100	100	70.8	0	0	0	0	0	100	99.2	97.4	100	98.9	87.8
Heavy Vehicles	1	0	0	0	1	0	52	0	0	52	0	0	0	0	0	0	1	1	0	2	55
% Heavy Vehicles	1.5	0	0	0	1.0	0	40.3	0	0	29.2	0	0	0	0	0	0	0.8	2.6	0	1.1	12.2





City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name: 154582 BB Site Code: 13220.00 Start Date: 8/16/2015

							Elliali. ua	tarequests	pullic.com								
						Grou	ıps Printe	ed- Cars -	Heavy Ve	hicles							
	Ga	s Station	Drivewa	y	Arriva	als Level S	ervice Ro	oad	•	Parking L	ot Exit		Arriva	als Level S	Service R	oad	
		From N				From E				From S				From \			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
05:00 PM	27	0	1	0	2	77	0	0	0	0	1	0	0	19	36	0	163
05:15 PM	17	0	2	0	4	75	0	0	0	0	0	0	0	21	29	0	148
05:30 PM	29	0	3	0	3	72	0	0	1	1	0	0	0	15	42	0	166
05:45 PM	26	0	0	0	5	79	0	0	0	0	1	0	0	21	36	0	168
Total	99	0	6	0	14	303	0	0	1	1	2	0	0	76	143	0	645
06:00 PM	30	0	2	0	8	84	0	0	0	0	0	0	0	19	39	0	182
06:15 PM	33	0	0	0	4	76	0	0	0	0	0	0	0	23	38	0	174
06:30 PM	36	0	0	0	4	64	0	0	1	0	1	0	0	24	34	0	164
06:45 PM	28	0	3	0	2	68	0	0	0	0	0	0	0	26	31	0	158
Total	127	0	5	0	18	292	0	0	1	0	1	0	0	92	142	0	678
				·								·				·	
Grand Total	226	0	11	0	32	595	0	0	2	1	3	0	0	168	285	0	1323
Apprch %	95.4	0	4.6	0	5.1	94.9	0	0	33.3	16.7	50	0	0	37.1	62.9	0	
Total %	17.1	0	8.0	0	2.4	45	0	0	0.2	0.1	0.2	0	0	12.7	21.5	0	
Cars	225	0	11	0	31	406	0	0	2	1	3	0	0	167	284	0	1130
% Cars	99.6	0	100	0	96.9	68.2	0	0	100	100	100	0	0	99.4	99.6	0	85.4
Heavy Vehicles	1	0	0	0	1	189	0	0	0	0	0	0	0	1	1	0	193
% Heavy Vehicles	0.4	0	0	0	3.1	31.8	0	0	0	0	0	0	0	0.6	0.4	0	14.6

			ation D	riveway rth		A		evel Se	rvice Ro	ad			king Lo rom So			Aı		evel Se	rvice Ro	oad	
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	or Entire	e Inters	sectior	n Begir	ns at 05:	:30 PM															
05:30 PM	29	0	3	0	32	3	72	0	0	75	1	1	0	0	2	0	15	42	0	57	166
05:45 PM	26	0	0	0	26	5	79	0	0	84	0	0	1	0	1	0	21	36	0	57	168
06:00 PM	30	0	2	0	32	8	84	0	0	92	0	0	0	0	0	0	19	39	0	58	182
06:15 PM	33	0	0	0	33	4	76	0	0	80	0	0	0	0	0	0	23	38	0	61	174
Total Volume	118	0	5	0	123	20	311	0	0	331	1	1	1	0	3	0	78	155	0	233	690
% App. Total	95.9	0	4.1	0		6	94	0	0		33.3	33.3	33.3	0		0	33.5	66.5	0		
PHF	.894	.000	.417	.000	.932	.625	.926	.000	.000	.899	.250	.250	.250	.000	.375	.000	.848	.923	.000	.955	.948
Cars	117	0	5	0	122	19	219	0	0	238	1	1	1	0	3	0	77	155	0	232	595
% Cars	99.2	0	100	0	99.2	95.0	70.4	0	0	71.9	100	100	100	0	100	0	98.7	100	0	99.6	86.2
Heavy Vehicles	1	0	0	0	1	1	92	0	0	93	0	0	0	0	0	0	1	0	0	1	95
% Heavy Vehicles	0.8	0	0	0	8.0	5.0	29.6	0	0	28.1	0	0	0	0	0	0	1.3	0	0	0.4	13.8



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Groups Printed- Cars File Name: 154582 BB Site Code: 13220.00 Start Date: 8/16/2015

								ips Printe	a- Cars								
	Ga	s Station I		y	Arriva	als Level S		oad		Parking Lo			Arriva	ils Level S		oad	
		From No				From E				From So				From \			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
05:00 PM	27	0	1	0	2	53	0	0	0	0	1	0	0	19	36	0	139
05:15 PM	17	0	2	0	4	48	0	0	0	0	0	0	0	21	29	0	121
05:30 PM	29	0	3	0	3	49	0	0	1	1	0	0	0	15	42	0	143
05:45 PM	25	0	0	0	5	56	0	0	0	0	1	0	0	20	36	0	143
Total	98	0	6	0	14	206	0	0	1	1	2	0	0	75	143	0	546
06:00 PM	30	0	2	0	8	60	0	0	0	0	0	0	0	19	39	0	158
06:15 PM	33	0	0	0	3	54	0	0	0	0	0	0	0	23	38	0	151
06:30 PM	36	0	0	0	4	42	0	0	1	0	1	0	0	24	34	0	142
06:45 PM	28	0	3	0	2	44	0	0	0	0	0	0	0	26	30	0	133
Total	127	0	5	0	17	200	0	0	1	0	1	0	0	92	141	0	584
Grand Total	225	0	11	0	31	406	0	0	2	1	3	0	0	167	284	0	1130
Apprch %	95.3	0	4.7	0	7.1	92.9	0	0	33.3	16.7	50	0	0	37	63	0	
Total %	19.9	0	1	0	2.7	35.9	0	0	0.2	0.1	0.3	0	0	14.8	25.1	0	

			tation D	riveway rth		Aı		evel Se	rvice Ro	oad			king Lo rom So			Α		evel Se	ervice Ro	oad	
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	r Entire	e Inter	sectior	n Begir	ns at 05:	30 PM															
05:30 PM	29	0	3	0	32	3	49	0	0	52	1	1	0	0	2	0	15	42	0	57	143
05:45 PM	25	0	0	0	25	5	56	0	0	61	0	0	1	0	1	0	20	36	0	56	143
06:00 PM	30	0	2	0	32	8	60	0	0	68	0	0	0	0	0	0	19	39	0	58	158
06:15 PM	33	0	0	0	33	3	54	0	0	57	0	0	0	0	0	0	23	38	0	61	151
Total Volume	117	0	5	0	122	19	219	0	0	238	1	1	1	0	3	0	77	155	0	232	595
% App. Total	95.9	0	4.1	0		8	92	0	0		33.3	33.3	33.3	0		0	33.2	66.8	0		
PHF	.886	.000	.417	.000	.924	.594	.913	.000	.000	.875	.250	.250	.250	.000	.375	.000	.837	.923	.000	.951	.941



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name: 154582 BB Site Code: 13220.00 Start Date: 8/16/2015

						G	Proups P	rinted- He	avy Vehicl	es							
	Ga	s Station I		y	Arriva	als Level S	Service R	oad		Parking Lo	ot Exit		Arriva	als Level S	Service R	oad	
		From No				From E				From Sc				From V			
Start Time	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Int. Total
05:00 PM	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	24
05:15 PM	0	0	0	0	0	27	0	0	0	0	0	0	0	0	0	0	27
05:30 PM	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	23
05:45 PM	1	0	0	0	0	23	0	0	0	0	0	0	0	1	0	0	25
Total	1	0	0	0	0	97	0	0	0	0	0	0	0	1	0	0	99
06:00 PM	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	0	24
06:15 PM	0	0	0	0	1	22	0	0	0	0	0	0	0	0	0	0	23
06:30 PM	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	22
06:45 PM	0	0	0	0	0	24	0	0	0	0	0	0	0	0	1	0	25
Total	0	0	0	0	1	92	0	0	0	0	0	0	0	0	1	0	94
Grand Total	1	0	0	0	1	189	0	0	0	0	0	0	0	1	1	0	193
Apprch %	100	0	0	0	0.5	99.5	0	0	0	0	0	0	0	50	50	0	
Total %	0.5	0	0	0	0.5	97.9	0	0	0	0	0	0	0	0.5	0.5	0	

			ation D			A		evel Se	rvice Ro	oad			king Lo			Aı		evel Se	rvice Ro	oad	
Start Time	Right	Thru	Left	U-Turn		Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	or Entire	e Inters	section	n Begir	ns at 05:	:00 PM															
05:00 PM	0	0	0	0	0	0	24	0	0	24	0	0	0	0	0	0	0	0	0	0	24
05:15 PM	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	0	0	0	0	0	27
05:30 PM	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	0	0	0	0	0	23
05:45 PM	1	0	0	0	1	0	23	0	0	23	0	0	0	0	0	0	1	0	0	1	25
Total Volume	1	0	0	0	1	0	97	0	0	97	0	0	0	0	0	0	1	0	0	1	99
% App. Total	100	0	0	0		0	100	0	0		0	0	0	0		0	100	0	0		
PHF	.250	.000	.000	.000	.250	.000	.898	.000	.000	.898	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.917



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name : 154582 BB Site Code : 13220.00 Start Date : 8/16/2015

										inted- P	eds and	Bikes									_
			ation Dr			Ar	rivals L			ad			ing Lot			Ar	rivals Le			ad	
		Fr	om Nor	th			F	rom Eas	st			Fr	om Sou	th			F	om We	st		L
Start	Right	Thru	Left	D. d. ED		Right	Thru	Left	Peds SB		Right	Thru	Left		D. J. ED	Right	Thru	Left		D. d. OD	Int. Total
Time	Rigitt	IIIIu	Leit	Peds EB	Peds WB	Rigiti	IIIIu	Leit	Peas SB	Peds NB	Right	IIIIu	Len	Peds WB	Peds EB	Rigiti	IIIIu	Leit	Peds NB	Peds SB	IIII. TOIAI
05:00 PM	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
05:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	0	0	4	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
00:00 DM		^	^	^	4		^	^	0	0		0	^	^	0	^	0	•	^	^	
06:00 PM	0	0	U	0	1	U	0	0	0	0	0	0	Ü	0	U	Ü	Ü	0	0	0	1
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
06:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Total	0	0	0	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
Grand Total	۱ ۸	0	0	8	8		0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
	0	-	0	-	-	0		0	-	0			0		-	0	0	0	-	0	10
Apprch %	0	0	0	50	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %	0	0	0	50	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

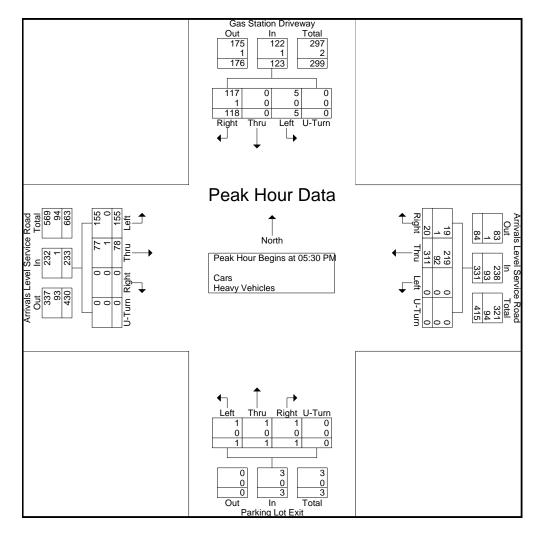
		Gas	Statio From	n Drive North			,	Arrival		l Servi	ce Roa	d		F		Lot Ex				Arrival	s Level From	Servic West	ce Roa	d	
Start Time	Right	Thru	Left	Peds EB	Peds WB	App. Total	Right	Thru	Left	Peds SB	Peds NB	App. Total	Right	Thru	Left	Peds WB	Peds EB	App. Total	Right	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour An	alysis F	rom 05	:00 PM	to 06:4	15 PM -	Peak 1	of 1				•											•	•		
Peak Hour	for Er	ntire Ir	nterse	ection	Begir	ns at 05	5:00 P	M																	
05:00 PM	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
05:15 PM	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
05:30 PM	0	0	0	1	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
05:45 PM	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	4	6	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10
% App. Total	0	0	0	40	60		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		
PHF	.000	.000	.000	.500	.500	.625	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.625



City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name : 154582 BB Site Code : 13220.00 Start Date : 8/16/2015

			ation D	riveway		Aı		evel Se	rvice Ro	ad			king Lo			Aı		evel Se	rvice Ro	oad	
Start Time	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Right	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis																					
Peak Hour fo	r Entir	e Inters	section	ı Begin	s at 05:	30 PM															
05:30 PM	29	0	3	0	32	3	72	0	0	75	1	1	0	0	2	0	15	42	0	57	166
05:45 PM	26	0	0	0	26	5	79	0	0	84	0	0	1	0	1	0	21	36	0	57	168
06:00 PM	30	0	2	0	32	8	84	0	0	92	0	0	0	0	0	0	19	39	0	58	182
06:15 PM	33	0	0	0	33	4	76	0	0	80	0	0	0	0	0	0	23	38	0	61	174
Total Volume	118	0	5	0	123	20	311	0	0	331	1	1	1	0	3	0	78	155	0	233	690
% App. Total	95.9	0	4.1	0		6	94	0	0		33.3	33.3	33.3	0		0	33.5	66.5	0		
PHF	.894	.000	.417	.000	.932	.625	.926	.000	.000	.899	.250	.250	.250	.000	.375	.000	.848	.923	.000	.955	.948
Cars	117	0	5	0	122	19	219	0	0	238	1	1	1	0	3	0	77	155	0	232	595
% Cars	99.2	0	100	0	99.2	95.0	70.4	0	0	71.9	100	100	100	0	100	0	98.7	100	0	99.6	86.2
Heavy Vehicles	1	0	0	0	1	1	92	0	0	93	0	0	0	0	0	0	1	0	0	1	95
% Heavy Vehicles	0.8	0	0	0	0.8	5.0	29.6	0	0	28.1	0	0	0	0	0	0	1.3	0	0	0.4	13.8





N: UPS Driveway

E/W: Arrivals Level Service Road

City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Groups Printed- Cars - Heavy Vehicles File Name: 154582 CC Site Code: 13220.00 Start Date: 8/16/2015

	ı	JPS Driveway		Arrival	ls Level Service	Road	Arrival	ls Level Service	Road	
		From North			From East			From West		
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
05:00 PM	0	0	0	0	69	0	22	0	0	91
05:15 PM	1	1	0	2	65	0	19	0	0	88
05:30 PM	1	2	0	2	72	0	21	1	0	99
05:45 PM	3	0	0	1	75	0	21	0	0	100
Total	5	3	0	5	281	0	83	1	0	378
06:00 PM	1	2	0	5	66	0	15	0	0	89
06:15 PM	2	5	0	3	70	1	20	1	0	102
06:30 PM	2	0	0	0	54	1	32	2	0	91
06:45 PM	2	1	0	3	68	6	28	1	0	109
Total	7	8	0	11	258	8	95	4	0	391
Grand Total	12	11	0	16	539	8	178	5	0	769
Apprch %	52.2	47.8	0	2.8	95.7	1.4	97.3	2.7	0	
Total %	1.6	1.4	0	2.1	70.1	1	23.1	0.7	0	
Cars	12	11	0	16	311	8	176	5	0	539
% Cars	100	100	0	100	57.7	100	98.9	100	0	70.1
Heavy Vehicles	0	0	0	0	228	0	2	0	0	230
% Heavy Vehicles	0	0	0	0	42.3	0	1.1	0	0	29.9

	UPS Driveway				Arı	rivals Level	Service Ro	ad	Arı	rivals Level	Service Ro	ad	
		From	North		From East								
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From	05:00 PM to 0	06:45 PM -	Peak 1 of 1										
Peak Hour for Entire	e Intersection	on Begins	at 06:00	PM									
06:00 PM	1	2	0	3	5	66	0	71	15	0	0	15	89
06:15 PM	2	5	0	7	3	70	1	74	20	1	0	21	102
06:30 PM	2	0	0	2	0	54	1	55	32	2	0	34	91
06:45 PM	2	1	0	3	3	68	6	77	28	1	0	29	109
Total Volume	7	8	0	15	11	258	8	277	95	4	0	99	391
% App. Total	46.7	53.3	0		4	93.1	2.9		96	4	0		
PHF	.875	.400	.000	.536	.550	.921	.333	.899	.742	.500	.000	.728	.897
Cars	7	8	0	15	11	142	8	161	93	4	0	97	273
% Cars	100	100	0	100	100	55.0	100	58.1	97.9	100	0	98.0	69.8
Heavy Vehicles	0	0	0	0	0	116	0	116	2	0	0	2	118
% Heavy Vehicles	0	0	0	0	0	45.0	0	41.9	2.1	0	0	2.0	30.2



N: UPS Driveway

E/W: Arrivals Level Service Road

City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Groups Printed- Cars File Name: 154582 CC Site Code: 13220.00 Start Date: 8/16/2015

						Groups Prin				
	ad	vel Service Ro		oad	evel Service Ro			Driveway		
		om West			rom East			m North		
Int. Total	U-Turn	Left	Thru	U-Turn	Thru	Right	U-Turn	Left	Right	Start Time
65	0	0	22	0	43	0	0	0	0	05:00 PM
58	0	0	19	0	35	2	0	1	1	05:15 PM
72	0	1	21	0	45	2	0	2	1	05:30 PM
71	0	0	21	0	46	1	0	0	3	05:45 PM
266	0	1	83	0	169	5	0	3	5	Total
61	0	0	15	0	38	5	0	2	1	06:00 PM
75	0	1	20	1	43	3	0	5	2	06:15 PM
67	0	2	32	1	30	0	0	0	2	06:30 PM
70	0	1	26	6	31	3	0	1	2	06:45 PM
273	0	4	93	8	142	11	0	8	7	Total
539	0	5	176	8	311	16	0	11	12	Grand Total
000	0	-		- 1			0			ı
	ŏ	0.9	32.7	1.5	57.7	3	o l	2	2.2	Total %
_	0 0	5 2.8	32 26 93 176 97.2	8 2.4	30 31 142 311 92.8	16 4.8	0 0 0 0 0 0 0 0 0	11 47.8	7 12 52.2	06:30 PM 06:45 PM Total Grand Total Apprch %

	UPS Driveway From North				Arrivals Level Service Road From East				Ar				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From	05:00 PM to	06:45 PM - F	Peak 1 of 1										
Peak Hour for Entire	e Intersection	on Begins	at 05:30	PM									
05:30 PM	1	2	0	3	2	45	0	47	21	1	0	22	72
05:45 PM	3	0	0	3	1	46	0	47	21	0	0	21	71
06:00 PM	1	2	0	3	5	38	0	43	15	0	0	15	61
06:15 PM	2	5	0	7	3	43	1	47	20	1	0	21	75
Total Volume	7	9	0	16	11	172	1	184	77	2	0	79	279
% App. Total	43.8	56.2	0		6	93.5	0.5		97.5	2.5	0		
PHF	.583	.450	.000	.571	.550	.935	.250	.979	.917	.500	.000	.898	.930



N: UPS Driveway

E/W: Arrivals Level Service Road

City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Groups Printed- Heavy Vehicles File Name: 154582 CC Site Code: 13220.00 Start Date: 8/16/2015

		UPS Driveway		Arrival	s Level Service	Road	Arrival	s Level Service	Road	
		From North			From East			From West		
Start Time	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	Int. Total
05:00 PM	0	0	0	0	26	0	0	0	0	26
05:15 PM	0	0	0	0	30	0	0	0	0	30
05:30 PM	0	0	0	0	27	0	0	0	0	27
05:45 PM	0	0	0	0	29	0	0	0	0	29
Total	0	0	0	0	112	0	0	0	0	112
06:00 PM	0	0	0	0	28	0	0	0	0	28
06:15 PM	0	0	0	0	27	0	0	0	0	27
06:30 PM	0	0	0	0	24	0	0	0	0	24
06:45 PM	0	0	0	0	37	0	2	0	0	39
Total	0	0	0	0	116	0	2	0	0	118
Grand Total	0	0	0	0	228	0	2	0	0	230
Apprch %	0	0	0	0	100	0	100	0	0	
Total %	0	0	0	0	99.1	0	0.9	0	0	

	UPS Driveway From North				Arrivals Level Service Road From East				Ar				
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis Fron													
Peak Hour for Entir	e Intersection	on Begins	s at 06:00	PM									
06:00 PM	0	0	0	0	0	28	0	28	0	0	0	0	28
06:15 PM	0	0	0	0	0	27	0	27	0	0	0	0	27
06:30 PM	0	0	0	0	0	24	0	24	0	0	0	0	24
06:45 PM	0	0	0	0	0	37	0	37	2	0	0	2	39
Total Volume	0	0	0	0	0	116	0	116	2	0	0	2	118
% App. Total	0	0	0		0	100	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.784	.000	.784	.250	.000	.000	.250	.756



N: UPS Driveway

E/W: Arrivals Level Service Road

City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Groups Printed- Peds and Bikes File Name: 154582 CC Site Code: 13220.00 Start Date: 8/16/2015

Page No : 1

							s and Bikes						
		UPS Dri			Arri		Service Roa	d	Arri		Service Roa	d	
		From N				From				From			
Start Time	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	Int. Total
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	0	0	0	1	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	1	0	0	0	0	0	0	0	0	1
Apprch %	0	0	0	100	0	0	0	0	0	0	0	0	
Total %	0	0	0	100	0	0	0	0	0	0	0	0	

			PS Drivev From Nor				Arrivals	Level Ser From Eas	vice Road				Level Ser From We	vice Road st		
Start Time	Right		Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB	Peds SB	App. Total	Int. Total
Peak Hour Analysis From																
Peak Hour for Er	ntire Inter	section	Begins a	at 06:00	PM											
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 PM	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	0	100		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

PRECISION D A T A INDUSTRIES, LLC

N: UPS Driveway

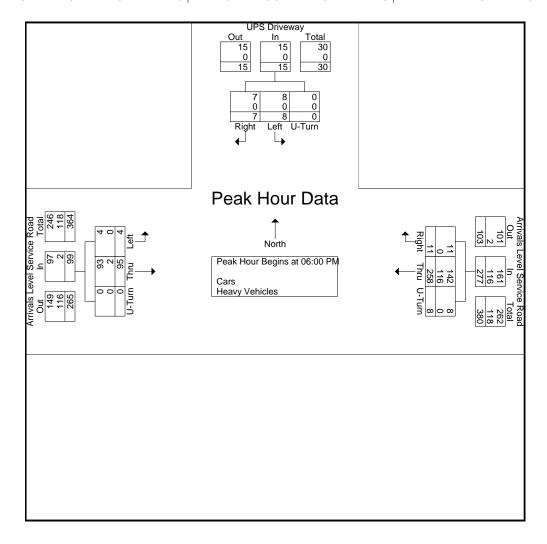
E/W: Arrivals Level Service Road

City, State: Boston, MA Client: VHB/ A. Costa

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com File Name : 154582 CC Site Code : 13220.00 Start Date : 8/16/2015

Page No : 1

		UPS Dr	iveway		Ar	rivals Level	Service Ro	ad	Arr	ivals Level	Service Ro	ad	
		From				From	East			From	West		
Start Time	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	Int. Total
Peak Hour Analysis From													
Peak Hour for Entire	e Intersection	on Begins	at 06:00	PM									
06:00 PM	1	2	0	3	5	66	0	71	15	0	0	15	89
06:15 PM	2	5	0	7	3	70	1	74	20	1	0	21	102
06:30 PM	2	0	0	2	0	54	1	55	32	2	0	34	91
06:45 PM	2	1	0	3	3	68	6	77	28	1	0	29	109
Total Volume	7	8	0	15	11	258	8	277	95	4	0	99	391
% App. Total	46.7	53.3	0		4	93.1	2.9		96	4	0		
PHF	.875	.400	.000	.536	.550	.921	.333	.899	.742	.500	.000	.728	.897
Cars	7	8	0	15	11	142	8	161	93	4	0	97	273
% Cars	100	100	0	100	100	55.0	100	58.1	97.9	100	0	98.0	69.8
Heavy Vehicles	0	0	0	0	0	116	0	116	2	0	0	2	118
% Heavy Vehicles	0	0	0	0	0	45.0	0	41.9	2.1	0	0	2.0	30.2





P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

154582 ATR A Class Site Code: 13220.00 Date Start: 15-Aug-15

NB			Email: da	tarequests@pdillc.com	1			_
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	35	1	5	0	0	41
01:00	0	0	59	1	5	3	0	68
02:00	0	0	50	3	7	0	0	60
03:00	0	0	23	0	7	2	1	33
04:00	0	0	12	0	4	0	0	16
05:00	0	0	9	1	10	0	0	20
06:00	0	0	24	1	14	0	0	39
07:00	0	0	40	3	20	1	0	64
08:00	0	0	75	1	16	0	0	92
09:00	0	0	35	2	21	1	0	59
10:00	0	0	44	3	21	0	0	68
11:00	0	0	35	3	27	1	0	66
12 PM	0	0	134	1	25	0	0	160
13:00	0	0	263	3	21	0	0	287
14:00	0	0	388	8	24	0	0	420
15:00	0	0	318	7	27	0	0	352
16:00	0	0	280	12	31	0	0	323
17:00	0	0	236	1	28	0	0	265
18:00	0	0	327	8	21	0	0	356
19:00	0	0	372	21	18	1	0	412
20:00	0	0	292	18	20	1	0	331
21:00	0	0	293	7	20	0	0	320
22:00	0	0	286	7	9	0	0	302
23:00	0	0	146	1	16	0	0	163
Total	0	0	3776	113	417	10	1	4317
Percent	0.0%	0.0%	87.5%	2.6%	9.7%	0.2%	0.0%	0.0%
AM Peak			08:00	02:00	11:00	01:00	03:00	08:00
Vol.			75	3	27	3	1	92
PM Peak			14:00	19:00	16:00	19:00		14:00
Vol.			388	21	31	1		420



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@odillc.com

NB				08.481.3999 Fax: 508.5 il: datarequests@pdillc.			Date	Start: 15-Aug-15
Start			Emai	Light	com	Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16			72	0	10	0	0	82
	:00		27	1	9	0	0	37
	:00	· -	11	1	3	0	0	15
	:00	•	8	1	3	0	0	12
	:00	0	2	0	4	1	0	7
	:00) 0	31	1	8	0	0	40
	:00	0	41	1	20	1	0	63
07	:00	0	60	3	21	0	0	84
08	:00	0	76	3	26	0	0	105
09	:00	0	27	0	26	0	0	53
10	:00	0	23	3	24	1	0	51
11	:00	0	50	1	21	0	0	72
12	PM (0	158	4	22	0	0	184
13	:00	0	266	5	28	0	0	299
14	:00	0	371	4	30	0	0	405
15	:00	0	289	3	26	1	0	319
16	:00	0	224	6	30	2	0	262
17	:00	0	234	4	25	0	0	263
18	:00	0	500	15	25	0	0	540
	:00	0	436	9	17	0	0	462
	:00	0	367	10	24	0	0	401
	:00		240	1	24	0	0	265
	:00		106	7	14	0	0	127
	:00		86	3	14	0	0	103
	otal (3705	86	454	6	0	4251
Perc		0.0%	87.2%	2.0%	10.7%	0.1%	0.0%	0.0%
AM Pe			08:00	07:00	08:00	04:00		08:00
	/ol.		76	3	26	1		105
PM Pe			18:00	18:00	14:00	16:00		18:00
\	/ol.		500	15	30	2		540

PRECISION
D A T A
INDUSTRIES, LLC
Box 301 Berlin, MA 01503

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com

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I	В

Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	25	1	5	0	0	31
01:00	0	0	19	0	3	0	0	22
02:00	0	0	5	0	1	1	0	7
03:00	0	0	5	1	3	1	0	10
04:00	0	0	12	1	8	2	1	24
05:00	0	0	25	3	12	0	0	40
06:00	0	1	51	7	19	1	0	79
07:00	0	0	70	8	29	2	0	109
08:00	0	0	83	4	29	0	0	116
09:00	0	0	31	8	30	3	0	72
10:00	0	0	45	0	31	2	0	78
11:00	0	0	65	9	26	1	0	101
12 PM	0	0	162	5	19	0	0	186
13:00	0	0	254	8	28	0	0	290
14:00	0	0	294	7	30	0	0	331
15:00	0	0	288	9	30	1	0	328
16:00	0	0	247	7	28	1	0	283
17:00	0	0	269	18	27	0	0	314
18:00	0	0	379	13	24	0	0	416
19:00	0	0	425	14	31	0	0	470
20:00	0	0	357	0	23	2	0	382
21:00	0	0	261	5	20	2	0	288
22:00	0	0	164	3	12	2	0	181
23:00	0	0	102	2	5	0	0	109
Total	0	1	3638	133	473	21	1	4267
Percent	0.0%	0.0%	85.3%	3.1%	11.1%	0.5%	0.0%	0.0%
AM Peak		06:00	08:00	11:00	10:00	09:00	04:00	08:00
Vol.		1	83	9	31	3	1	116
PM Peak			19:00	17:00	19:00	20:00		19:00
Vol.			425	18	31	2		470



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	31	1	8	0	0	40
01:00	0	0	14	1	2	1	0	18
02:00	0	0	5	0	3	0	0	8
03:00	0	0	5	1	2	1	1	10
04:00	0	0	12	0	5	1	0	18
05:00	0	0	32	4	13	2	0	51
06:00	0	0	77	9	29	2	0	117
07:00	0	0	87	1	30	0	0	118
08:00	0	0	75	5	25	0	0	105
09:00	0	0	39	7	33	2	0	81
10:00	0	0	50	7	29	1	0	87
11:00	0	0	56	5	36	1	0	98
12 PM	0	0	142	7	29	2	0	180
13:00	0	0	178	10	29	2	1	220
14:00	0	0	286	12	33	1	0	332
15:00	0	0	193	3	24	0	0	220
16:00	0	0	216	2	27	1	0	246
17:00	0	0	290	2	29	2	0	323
18:00	0	0	437	18	30	0	0	485
19:00	0	0	394	19	20	0	0	433
20:00	0	0	417	18	14	0	0	449
21:00	0	0	289	3	2	0	0	294
22:00	0	1	155	7	15	0	0	178
23:00	0	0	145	0	9	0	0	154
Total	0	1	3625	142	476	19	2	4265
Percent	0.0%	0.0%	85.0%	3.3%	11.2%	0.4%	0.0%	0.0%
AM Peak			07:00	06:00	11:00	05:00	03:00	07:00
Vol.			87	9	36	2	1	118
PM Peak		22:00	18:00	19:00	14:00	12:00	13:00	18:00
Vol.		1	437	19	33	2	1	485



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Start		NB					,						Sat	
Time	A.M.		P.M.										15-Aug- 15	
12:00	15		25											
12:15	7		40											
12:30 12:45	11	41	52 43	160										
01:00	8 5	41	43 72	160										
01:00	12		73											
01:30	19		79											
01:45	32	68	63	287										
02:00	20	00	77	201										
02:15	17		98											
02:30	11		136											
02:45	12	60	109	420										
03:00	15		88											
03:15	2		91											
03:30	7		91											
03:45	9	33	82	352										
04:00	3		83											
04:15	2		92											
04:30	7		73											
04:45	4	16	75	323										
05:00	3		57											
05:15	5		58											
05:30	7		63											
05:45	5	20	87	265										
06:00	6		83											
06:15	9		78											
06:30	14		106											
06:45	10	39	89	356										
07:00	7		94											
07:15	17		118											
07:30	20		111											
07:45	20	64	89	412										
08:00	24		101											
08:15	27		88											
08:30	23	00	83	204										
08:45	18	92	59	331										
09:00 09:15	18 9		57 50											
09:13	15		92											
09:45	17	59	121	320										
10:00	20	39	81	320										
10:15	20		71											
10:10	12		82											
10:30 10:45	16	68	68	302										
11:00	19		32											
11:15	13		30											
11:30	21		45											
11:45	13	66	56	163										
Total	626		3691											
Percent		1	00.0%		0.0%		0.0%							
Day Total		4317												
Peak	07:45	_	02:15	_	_	_	_	_	_	_	_	_	_	_
Vol.	94	-	431	-	-	-	-	_	-	-	_	_	-	_
P.H.F.	0.870		0.792											
	0.070		3 32											



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Time													Sun	
	A.M.		P.M.										16-Aug- 15	
12:00	45		27											
12:15	16		60											
12:30	13		46											
12:45	8	82	51	184										
01:00	14		70											
01:15	10		83											
01:30	6		58											
01:45	7	37	88	299										
02:00	8		95											
02:15	2		113											
02:30	2		105											
02:45	3	15	92	405										
03:00	6		89											
03:15	3		83											
03:30	1		82											
03:45	2	12	65	319										
04:00	0		63											
04:15	4		67											
04:30	1		73											
04:45	2	7	59	262										
05:00	3		52											
05:15	10		53											
05:30	11		68											
05:45	16	40	90	263										
06:00	14		132											
06:15	22		143											
06:30	13		137											
06:45	14	63	128	540										
07:00	19		100											
07:15	26		122											
07:30	17		133											
07:45	22	84	107	462										
08:00	25		108											
08:15	30		99											
08:30	29		92											
08:45	21	105	102	401										
09:00	14		78											
09:15	12		60											
09:30	16		64											
09:45	11	53	63	265										
10:00	15		29											
10:15	9		16											
10:30 10:45	12		57											
10:45	15	51	25	127										
11:00	15		37											
11:15	17		30											
11:30	20		23											
11:45	20	72	13	103										
Total	621		3630											
Percent		1	100.0%		0.0%		0.0%							
Day Total		4251	I											
Peak	07:45	_	06:00	_	_	_	_	_	_	_	_	_	-	
Vol.	106	_	540	_	-	_	_	_	-	_	-	-	_	
P.H.F.	0.883		0.944											



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Start		NB											Mon	
Time	A.M.		P.M.										17-Aug- 15	
12:00	9		34											
12:15	11		30											
12:30	7		69											
12:45	4	31	53	186										
01:00	6		65											
01:15	7		54											
01:30	3		85											
01:45	6	22	86	290										
02:00	2		91											
02:15	2		86											
02:30	0	_	87	004										
02:45	3	7	67	331										
03:00	3		82											
03:15	2		88											
03:30	2	4.0	87	000										
03:45	3	10	71	328										
04:00	4		70											
04:15	7		59											
04:30	10	24	80	202										
04:45	3	24	74	283										
05:00	5 12		69 87											
05:15 05:30	11		80											
05:45	12	40	78	314										
06:00	18	40	97	314										
06:00	20		100											
06:30	24		104											
06:45	17	79	115	416										
07:00	24	7.5	120	410										
07:15	30		97											
07:30	37		126											
07:45	18	109	127	470										
08:00	39	103	101	470										
08:15	35		112											
08:30	26		97											
08:45	16	116	72	382										
09:00	20	1.10	76	002										
09:15	15		84											
09:30	17		72											
09:45	20	72	56	288										
10:00	19	. –	35											
10:15	20		49											
10:30	23		45											
10:45	16	78	52	181										
11:00	20	-	38											
11:15	29		27											
11:30	20		33											
11:45	32	101	11	109										
Total Percent	689		3578 00.0%		0.0%		0.0%							
Day Total		4267												
Dools	07:20		07:00											
Peak Vol.	07:30 129	-	07:00 470	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.827	-	0.925	-	-	-	-	-	-	-	-	-	-	
r.n.r.	0.027		0.925											



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Start		NB											Tue	
Time	A.M.		P.M.										18-Aug- 15	
12:00	14		41											
12:15	12		43											
12:30	8		50											
12:45	6	40	46	180										
01:00	5		50											
01:15	4		63											
01:30	6		56											
01:45	3	18	51	220										
02:00	1	10	76	220										
02:00	3		86											
02:15 02:30	4		97											
02:30	0	8	73	332										
02.43		0	73 57	332										
03:00	5													
03:15	2		59											
03:30	3	4.0	53	000										
03:45	0	10	51	220										
04:00	3		49											
04:15 04:30	6		54											
04:30	4		75											
04:45	5	18	68	246										
05:00	12		68											
05:15	8		99											
05:30	16		65											
05:45	15	51	91	323										
06:00	23		73											
06:15	40		120											
06:30	28		145											
06:45	26	117	147	485										
07:00	33		90											
07:15	29		113											
07:30	35		121											
07:45	21	118	109	433										
08:00	29	110	118	400										
08:00	29													
08:30	29		121											
08:30	33	405	111	4.40										
08:45	14	105	99	449										
09:00	23		59											
09:15	23		86											
09:30	16		86											
09:45	19	81	63	294										
10:00	22		60											
10:15	17		52											
10:30	23		32											
10:45	25	87	34	178										
11:00	24		41											
11:15	25		30											
11:30	21		40											
11:45	28	98	43	154										
Total	751		3514											
Percent			100.0%		0.0%		0.0%							
Day Total		426	5											
Peak	06:15	-	06:15	-	-	-	_	-	_	-	-	-	-	
Peak Vol.	06:15 127	-	06:15 502	-	-	-	-	-	-	-	-	-	-	



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@odillc.com

NB				1.3999 Fax: 508.545.123 areguests@pdillc.com	34		Date Star	i. 15-Aug-15
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	29	2	41	1	0	73
01:00	0	0	11	3	30	3	0	47
02:00	0	0	9	1	13	2	0	25
03:00	0	0	14	0	12	0	0	26
04:00	0	0	15	0	26	0	0	41
05:00	0	0	21	5	31	2	0	59
06:00	0	0	32	1	35	2	0	70
07:00	0	0	58	2	25	1	0	86
08:00	0	0	41	2	44	2	0	89
09:00	0	0	15	0	42	2	0	59
10:00	0	0	29	4	44	0	0	77
11:00	0	0	41	2	49	1	0	93
12 PM	0	0	30	3	41	3	0	77
13:00	0	0	29	4	50	0	0	83
14:00	0	0	35	2	54	0	0	91
15:00	0	0	39	6	55	1	0	101
16:00	0	0	51	5	46	0	0	102
17:00	0	0	42	10	62	2	0	116
18:00	0	0	29	0	60	4	0	93
19:00	0	0	56	1	61	2	0	120
20:00	0	2	133	7	60	1	0	203
21:00	0	1	93	4	62	3	0	163
22:00	0	1	41	3	57	0	0	102
23:00	0	0	42	3	46	0	0	91
Total	0	4	935	70	1046	32	0	2087
Percent	0.0%	0.2%	44.8%	3.4%	50.1%	1.5%	0.0%	0.0%
AM Peak			07:00	05:00	11:00	01:00		11:00
Vol.			58	5	49	3		93
PM Peak		20:00	20:00	17:00	17:00	18:00		20:00
Vol.		2	133	10	62	4		203



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NB				1.3999 Fax: 508.545.123 areguests@pdillc.com	34		Date Star	15-Aug-15
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	33	4	34	2	0	73
01:00	0	0	17	4	26	5	0	52
02:00	0	0	12	1	7	7	0	27
03:00	0	0	16	0	20	0	0	36
04:00	0	0	15	0	25	0	0	40
05:00	0	0	12	0	31	0	0	43
06:00	0	0	22	1	33	1	0	57
07:00	0	0	30	1	35	0	0	66
08:00	0	0	47	3	39	2	0	91
09:00	0	0	27	0	39	0	0	66
10:00	0	0	25	4	41	0	0	70
11:00	0	0	38	4	46	2	0	90
12 PM	0	0	37	4	49	2	0	92
13:00	0	0	33	1	55	0	0	89
14:00	0	0	48	3	52	1	0	104
15:00	0	0	36	2	59	0	0	97
16:00	0	0	32	4	57	2	0	95
17:00	0	0	26	5	64	0	0	95
18:00	0	0	36	3	63	0	0	102
19:00	0	0	78	2	70	1	0	151
20:00	0	0	35	3	52	1	0	91
21:00	0	0	68	2	41	13	0	124
22:00	0	0	36	1	52	1	0	90
23:00	0	0	29	3	46	0	0	78
Total	0	0	788	55	1036	40	0	1919
Percent	0.0%	0.0%	41.1%	2.9%	54.0%	2.1%	0.0%	0.0%
AM Peak			08:00	00:00	11:00	02:00		08:00
Vol.			47	4	46	7		91
PM Peak			19:00	17:00	19:00	21:00		19:00
Vol.			78	5	70	13		151



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IND			Ellidii. Udl	arequests@pullic.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	16	2	34	3	0	55
01:00	0	0	17	1	25	0	0	43
02:00	0	0	7	1	14	0	0	22
03:00	0	0	19	1	20	0	0	40
04:00	0	0	13	2	21	2	0	38
05:00	0	0	37	8	42	1	0	88
06:00	0	0	35	7	45	2	0	89
07:00	0	0	59	13	24	26	0	122
08:00	0	0	47	11	45	2	0	105
09:00	0	0	51	6	36	18	0	111
10:00	0	0	37	6	41	3	0	87
11:00	0	1	51	8	56	3	0	119
12 PM	0	3	35	7	56	4	0	105
13:00	0	0	51	17	52	2	0	122
14:00	0	0	48	12	54	0	0	114
15:00	0	0	41	8	54	0	0	103
16:00	0	1	40	8	60	1	0	110
17:00	0	0	35	3	57	4	0	99
18:00	0	0	49	6	53	0	0	108
19:00	0	1	60	13	58	2	0	134
20:00	0	0	48	8	47	1	0	104
21:00	0	0	38	4	59	2	0	103
22:00	0	0	36	5	46	0	0	87
23:00	0	0	25	1	57	1	0	84
Total	0	6	895	158	1056	77	0	2192
Percent	0.0%	0.3%	40.8%	7.2%	48.2%	3.5%	0.0%	0.0%
AM Peak		11:00	07:00	07:00	11:00	07:00		07:00
Vol.		1	59	13	56	26		122
PM Peak		12:00	19:00	13:00	16:00	12:00		19:00
Vol.		3	60	17	60	4		134



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	34	7	39	1	0	81
01:00	0	0	12	2	26	1	0	41
02:00	0	0	7	3	14	1	0	25
03:00	0	0	9	2	17	1	0	29
04:00	0	0	9	3	20	4	0	36
05:00	0	1	42	10	34	1	0	88
06:00	0	0	33	12	39	0	0	84
07:00	0	0	49	7	42	7	0	105
08:00	0	0	51	6	44	5	0	106
09:00	0	0	50	13	51	0	0	114
10:00	0	0	39	8	41	1	0	89
11:00	0	0	61	6	50	1	0	118
12 PM	0	0	40	9	49	2	0	100
13:00	0	0	45	12	50	1	0	108
14:00	0	0	57	8	56	1	0	122
15:00	0	1	44	2	53	1	0	101
16:00	0	0	75	1	54	1	0	131
17:00	0	0	58	9	59	0	0	126
18:00	0	0	61	6	57	2	0	126
19:00	0	0	87	7	63	2	0	159
20:00	0	0	68	4	62	0	0	134
21:00	0	0	104	3	47	10	1	165
22:00	0	0	48	3	54	1	0	106
23:00	0	0	16	2	47	0	0	65_
Total	0	2	1099	145	1068	44	1	2359
Percent	0.0%	0.1%	46.6%	6.1%	45.3%	1.9%	0.0%	0.0%
AM Peak		05:00	11:00	09:00	09:00	07:00		11:00
Vol.		11	61	13	51	7		118
PM Peak		15:00	21:00	13:00	19:00	21:00	21:00	21:00
Vol.		1	104	12	63	10	1	165



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Start		NB											Sat	
Time	A.M.		P.M.										15-Aug- 15	
12:00	21		17		,									
12:15	14		25											
12:30	19		18											
12:45	19	73	17	77										
01:00	13		19											
01:15	15		23											
01:30	12		20											
01:45	7	47	21	83										
02:00	9		16											
02:15	8		23											
02:30	3		32											
02:45	5	25	20	91										
03:00	6	20	26	0.										
03:15	12		23											
03:30	2		21											
03:45	6	26	31	101										
03.43	6	20	33	101										
04:00	15		22											
04:15	15 10		22 29											
04:30	10	44	29 40	100										
04:45	10	41	18	102										
05:00	13		36											
05:15	9		24											
05:30	14		22											
05:45	23	59	34	116										
06:00	24		19											
06:15	21		40											
06:30	6		13											
06:45	19	70	21	93										
07:00	20		24											
07:15	19		30											
07:30	24		22											
07:45	23	86	44	120										
08:00	19		39											
08:15	21		61											
08:30	22		53											
08:45	27	89	50	203										
09:00	11		53	_00										
09:15	17		52											
09:30	13		24											
09:45	18	59	34	163										
10:00	20	59	29	103										
10.00	20		29											
10:15	15		25											
10:30	20	77	32	400										
10:45	22	77	16	102										
11:00	28		19											
11:15	21		31											
11:30	26		20											
11:45	18	93	21	91										
Total	745		1342											
Percent		1	00.0%		0.0%		0.0%							
ay Total		2087												
Peak	10:45	_	08:15	_	_	_	_	_	_	_	_	_	_	
Vol.	97	-	217	-	-	-	-	-	-	-	-	-	-	
VOI.														



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Start		NB											Sun	
Time	A.M.		P.M.										16-Aug- 15	
12:00	20		19										10	
12:15	20		27											
12:30	17		18											
12:45	16	73	28	92										
01:00	9		21											
01:15	17		20											
01:30	12		29											
01:45	14	52	19	89										
02:00	7		26											
02:15	6		20											
02:30	5		22											
02:45	5 9	27	36	104										
03:00	7		22											
03:15	11		21											
03:30	10		24											
03:45	8	36	30	97										
04:00	6	30	25	31										
04:00	13		22											
04:13	10		26											
04:45	11	40	22	95										
04.45		40	24	95										
05:00	9		24											
05:15	12		23											
05:30	10	40	25	0.5										
05:45	12	43	23	95										
06:00	11		22											
06:15	16		29											
06:30	18		19											
06:45	12	57	32	102										
07:00	9		29											
07:15	13		36											
07:30	17		64											
07:45	27	66	22	151										
08:00	30		20											
08:15	23		27											
08:30	17		17											
08:45	21	91	27	91										
09:00	21		35	-										
09:15	14		31											
09:30	13		37											
09:45	18	66	21	124										
10:00	24	00	23											
10:15	14		14											
10:30	16		22											
10:45	16	70	31	90										
11:00	21	. 0	19	50										
11:15	26		16											
11:30	19		25											
11:45	24	90	18	78										
Total	711	30	1208	70									-	
Percent	7 1 1	1	00.0%		0.0%	(0.0%							
ay Total		1919)											
Peak	07:30		06:45											
Vol.	97	-	06:45 161	-	-	-	-	-	-	-	-	-	-	
VOI.	0.808	-	0.629	-	-	-	-	-	-	-	-	-	-	
P.H.F.														



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Start		NB											Mon	
Time	A.M.		P.M.										17-Aug- 15	
12:00	10		26											
12:15 12:30	14		22											
12:30	18		25											
12:45	13	55	32	105										
01:00	7		26											
01:15	13		23											
01:30	9		32											
01:45	14	43	41	122										
02:00	4	.0	32											
02:00	7		27											
02:15 02:30	8		33											
02:45	3	22	22	114										
02.45	3	22	22 27	114										
03:00	14		21											
03:15 03:30	7		21											
03:30	9	40	28	400										
03:45	10	40	27	103										
04:00	10		27											
04:15 04:30	6		23											
04:30	10		36	4										
04:45	12	38	24	110										
05:00	16		25											
05:15	20		21											
05:30	21		23											
05:45	31	88	30	99										
06:00	21		26											
06:15	19		24											
06:30	22		24											
06:45	27	89	34	108										
07:00	26		22											
07:15	31		45											
07:30	26		34											
07:45	39	122	33	134										
08:00	27	122	31	134										
08:15	27 27		31											
08:30			29											
08:30	24	405	24	404										
08:45	27	105	20	104										
09:00	25		24											
09:15	29		33											
09:30	36		26											
09:45	21	111	20	103										
10:00	21		19											
10:15	22		20											
10:30	26		21											
10:45	18	87	27	87										
11:00	28		12											
11:15	39		22											
11:30	30		26											
11:45	22	119	24	84										
Total	919		1273											
Percent		1	00.0%		0.0%		0.0%							
ay Total		2192												
Peak	07:15		07:15										_	
Vol.	07:15 123	-	143	-	-	-	-	-	-	-	-	-	-	
v Oi.	0.788	-	0.794	-	-	-	-	-	-	-	-	-	-	
P.H.F.	Λ 700		0.704											



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Start		NB											Tue	
Time	A.M.		P.M.										18-Aug- 15	
12:00	26		19											
12:15	24		25											
12:30	20		32											
12:45	11	81	24	100										
01:00	8		29											
01:15	15		25											
01:30	13		33	400										
01:45	5	41	21	108										
02:00	8		26											
02:15	8		28											
02:30	4	0.5	33	400										
02:45	5	25	35	122										
03:00	5		23											
03:15	6		21											
03:30	9	00	30	404										
03:45	9	29	27	101										
04:00	8		42											
04:15	6		30											
04:30 04:45	10 12	36	25 34	131										
04:45	12	36	34	131										
05:00	20		28											
05:15	20		31											
05:30	24	00	33	126										
05:45	24 21	88	34 28	126										
06:00 06:15	20		39											
06:30	28 17		39 29											
06:45	18	84	30	126										
07:00	24	04	31	120										
07:00	28		56											
07:30	26		36											
07:45	27	105	36	159										
08:00	25	103	27	133										
08:15	23		23											
08:30	31		30											
08:45	27	106	54	134										
09:00	29	100	55	104										
09:15	28		32											
09:30	33		47											
09:45	24	114	31	165										
10:00	20		21	100										
10:15	29		27											
10:30	23		34											
10:45	17	89	24	106										
11:00	35	00	12	100										
11:15	24		24											
11:30	32		18											
11:45	27	118	11	65										
Total	916		1443											
Percent		1	00.0%		0.0%		0.0%							
Day Total		2359)											
Peak	11:00	_	08:45	_	_	_	_	_	_	_	_	_	_	
			55.10											
Vol.	118	-	188	-	-	-	_	-	-	-	-	-	-	_



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	9	3	0	0	0	12
01:00	0	0	12	0	0	0	0	12
02:00	0	0	7	0	0	0	0	7
03:00	0	0	2	0	0	0	0	2
04:00	0	0	2	1	0	0	0	3
05:00	0	0	5	1	0	0	0	6
06:00	0	0	5	1	0	0	0	6
07:00	0	0	14	0	0	0	0	14
08:00	0	0	14	2	1	0	0	17
09:00	0	0	9	1	0	1	0	11
10:00	0	0	9	1	0	0	0	10
11:00	0	0	14	1	0	0	0	15
12 PM	0	0	17	1	1	0	0	19
13:00	0	0	36	2	0	0	0	38
14:00	0	0	68	2	0	2	0	72
15:00	0	0	101	3	3	0	0	107
16:00	0	0	50	2	3	0	0	55
17:00	0	0	30	3	0	2	0	35
18:00	0	0	68	2	3	0	0	73
19:00	0	0	169	7	3	0	0	179
20:00	0	0	165	2	7	1	0	175
21:00	0	0	56	4	5	0	0	65
22:00	0	0	60	8	0	1	0	69
23:00	0	0	25	1	0	1	0	27
Total	0	0	947	48	26	8	0	1029
Percent	0.0%	0.0%	92.0%	4.7%	2.5%	0.8%	0.0%	0.0%
AM Peak			07:00	00:00	08:00	09:00		08:00
Vol.			14	3	1	1		17
PM Peak			19:00	22:00	20:00	14:00		19:00
Vol.			169	8	7	2		179



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	15	0	0	2	0	17
01:00	0	0	4	0	0	0	0	4
02:00	0	0	2	0	0	0	0	2
03:00	0	0	5	0	0	0	0	5
04:00	0	0	3	0	0	0	0	3
05:00	0	0	6	0	1	0	0	7
06:00	0	0	4	2	1	0	0	7
07:00	0	0	9	1	1	0	0	11
08:00	0	0	5	1	0	1	0	7
09:00	0	0	5	2	0	1	0	8
10:00	0	0	5	1	0	2	0	8
11:00	0	0	11	1	0	0	0	12
12 PM	0	0	20	2	0	0	0	22
13:00	0	1	33	3	1	0	0	38
14:00	0	0	37	1	1	0	0	39
15:00	0	0	23	1	5	0	0	29
16:00	0	0	50	4	3	0	0	57
17:00	0	0	45	0	1	0	0	46
18:00	0	0	119	7	1	0	0	127
19:00	0	0	97	12	3	1	0	113
20:00	0	0	112	4	2	0	0	118
21:00	0	0	53	5	3	0	0	61
22:00	0	0	24	0	1	0	0	25
23:00	0	0	9	3	0	1	0	13
Total	0	1	696	50	24	8	0	779
Percent	0.0%	0.1%	89.3%	6.4%	3.1%	1.0%	0.0%	0.0%
AM Peak			00:00	06:00	05:00	00:00		00:00
Vol.			15	2	1	2		17
PM Peak		13:00	18:00	19:00	15:00	19:00		18:00
Vol.		1	119	12	5	1		127



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-	

Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	4	1	0	1	0	6
01:00	0	0	4	3	0	0	0	7
02:00	0	0	0	0	0	0	0	0
03:00	0	0	3	0	0	0	0	3
04:00	0	0	0	1	0	3	0	4
05:00	0	0	4	7	0	1	0	12
06:00	0	0	14	3	0	1	0	18
07:00	0	0	29	13	0	2	0	44
08:00	0	0	19	6	0	0	0	25
09:00	0	0	12	4	0	1	0	17
10:00	0	0	8	3	0	0	0	11
11:00	0	0	17	6	0	1	0	24
12 PM	0	0	33	6	0	1	0	40
13:00	0	0	48	7	0	2	0	57
14:00	0	1	35	3	0	1	1	41
15:00	0	1	33	7	5	0	0	46
16:00	0	0	35	17	2	0	0	54
17:00	0	0	21	6	2	1	0	30
18:00	0	0	55	4	2	1	0	62
19:00	0	0	97	5	3	1	0	106
20:00	0	0	70	0	6	1	0	77
21:00	0	0	51	1	0	5	0	57
22:00	0	0	24	0	1	1	0	26
23:00	0	0	9	2	1	0	0	12
Total	0	2	625	105	22	24	1	779
Percent	0.0%	0.3%	80.2%	13.5%	2.8%	3.1%	0.1%	0.0%
AM Peak			07:00	07:00		04:00		07:00
Vol.			29	13		3		44
PM Peak	-	14:00	19:00	16:00	20:00	21:00	14:00	19:00
Vol.		1	97	17	6	5	1	106



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	7	7	0	1	0	15
01:00	0	0	0	2	0	0	0	2
02:00	0	0	1	4	0	0	0	5
03:00	0	0	1	0	0	1	0	2
04:00	0	0	1	0	0	4	0	5
05:00	0	0	6	0	1	1	0	8
06:00	0	0	4	8	0	0	0	12
07:00	0	0	22	7	0	2	0	31
08:00	0	0	49	3	2	1	0	55
09:00	0	0	10	5	1	2	0	18
10:00	0	0	10	2	3	0	0	15
11:00	0	0	15	7	0	2	0	24
12 PM	0	0	25	7	0	2	0	34
13:00	0	0	26	8	0	1	0	35
14:00	0	1	39	8	2	2	0	52
15:00	0	0	43	5	5	1	0	54
16:00	0	0	30	1	1	0	0	32
17:00	0	0	46	3	3	1	0	53
18:00	0	0	69	4	4	2	0	79
19:00	0	0	147	9	3	0	0	159
20:00	0	0	189	8	3	0	0	200
21:00	0	0	90	1	3	4	0	98
22:00	0	0	29	0	1	0	0	30
23:00	0	0	24	0	0	1	0	25
Total	0	1	883	99	32	28	0	1043
Percent	0.0%	0.1%	84.7%	9.5%	3.1%	2.7%	0.0%	0.0%
AM Peak			08:00	06:00	10:00	04:00		08:00
Vol.			49	8	3	4		55
PM Peak		14:00	20:00	19:00	15:00	21:00		20:00
Vol.		1	189	9	5	4		200



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Start		EB											Sat	
Time	A.M.		P.M.										15-Aug- 15	
12:00	3		3											
12:15	2		7											
12:30	4		4											
12:45	3	12	5	19										
01:00	Ö		4											
01:15	1		11											
01.13			12											
01:30	6	40	12	20										
01:45	5	12	11	38										
02:00	4		19											
02:15	2		6											
02:30	1		23											
02:45	0	7	24	72										
03:00	0		25											
03:15	0		40											
03:30	Ō		25											
03:45	2	2	17	107										
04:00	0	_	14	107										
04.00	0													
04:15	0		17											
04:30	1	•	11											
04:45	2	3	13	55										
05:00	3		8											
05:15	1		11											
05:30	0		6											
05:45	2	6	10	35										
06:00	3		6											
06:15	0		25											
06:30	Ō		17											
06:45	3	6	25	73										
07:00	3	O	44	75										
07:00	4													
07.15			64											
07:30	4		40											
07:45	3	14	31	179										
08:00	9		51											
08:15	5		51											
08:30	2		40											
08:45	1	17	33	175										
09:00	2		19											
09:15	3		15											
09:30	3		17											
09:45	3	11	14	65										
10:00	5	11	15	00										
10.00	0		10											
10:15	2		22											
10:30	1	40	24											
10:45	2	10	8	69										
11:00	8		7											
11:15	0		5											
11:30	4		9											
11:45	3	15	6	27										
Total	115		914											
Percent		1	00.0%		0.0%		0.0%							
ay Total		1029												
5 .	07:30		07:15							_	_		_	
Dogr		-	UL. IO	-	-	-	-	-	-	-	-	-	-	
Peak Vol.	21		186										_	



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Start		EB											Sun	
Гime	A.M.		P.M.										16-Aug- 15	
12:00	4		4									-		
12:15	8		6											
12:30	2		2											
12:45	3	17	10	22										
01:00	1		13											
01:15	0		9											
01:30	Ö		3											
01:45	3	4	13	38										
02:00	0	•	14	00										
02:15	Ö		10											
02:30	0		4											
02:45	2	2	11	39										
03:00		2		39										
03.00	1		8											
03:15	2		9											
03:30	0	_	8	00										
03:45	2	5	4	29										
04:00	0		14											
04:15	0		14											
04:30	2		18											
04:45	1	3	11	57										
05:00	2		9											
05:15	4		6											
05:30	1		13											
05:45	0	7	18	46										
06:00	1		27											
06:15	4		42											
06:30	2		32											
06:45	0	7	26	127										
07:00	3		36											
07:15	Ō		35											
07:30	4		22											
07:45	4	11	20	113										
08:00	1		28	110										
08:15	3		32											
08:30	2		32											
08:45	1	7	26	118										
00.40		′	40 40	110										
09:00	0		12											
09:15	4		21											
09:30	3	^	24	0.4										
09:45	1	8	4	61										
10:00	1		4											
10:15	1		6											
10:30	2	_	5											
10:45	4	8	10	25										
11:00	5		3											
11:15	1		3											
11:30	2		4											
11:45	4	12	3	13										
Total	91		688											
Percent		1	00.0%		0.0%		0.0%							
ay Total		779												
D I	12:00	_	06:15	_	_	_	_	_	_	_	_	_	_	
Peak			00.10	_	-	-	-	-	_	_	-	_	_	
Peak Vol.	17	_	136	_	_	_	_	_	_	_	_	_	_	



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Start		EB											Mon	
Time	A.M.		P.M.										17-Aug- 15	
12:00	2		8											
12:15	2		13											
12:30	2		5											
12:45	0	6	14	40										
01:00	1	· ·	8											
01:15	1		14											
01.13	2		21											
01:30	2	7												
01:45	3	7	14	57										
02:00	0		11											
02:15	0		7											
02:30	0		11											
02:45	0	0	12	41										
03:00	2		16											
03:15	1		10											
03:30	0		5											
03:45	0	3	15	46										
03.43		3	15	40										
04:00	1		9											
04:15	1		15											
04:30	0		12											
04:45	2	4	18	54										
05:00	2		12											
05:15	4		6											
05:30	3		4											
05:45	3	12	8	30										
06:00	5	12	12	50										
00.00	5		12											
06:15	3		17											
06:30	3		8											
06:45	7	18	25	62										
07:00	12		26											
07:15	9		17											
07:30	12		20											
07:45	11	44	43	106										
08:00	9		16	100										
00.00	9													
08:15	9		24											
08:30	4		23											
08:45	3	25	14	77										
09:00	3		29											
09:15	7		10											
09:30	3		9											
09:45	4	17	9	57										
10:00	3	•	8											
10:15	2		10											
10:13	3		4											
10.30	3	11		26										
10:45	3	11	4	26										
11:00	3		3											
11:15	7		6											
11:30	6		1											
11:45	8	24	2	12										
Total	171		608											
Percent		1	00.0%		0.0%		0.0%							
			/ 0		/-									
Day Total		779												
ay i olai		119												
Peak	07:00	_	07:00	_	_	_	_	_	_	_	_	_	_	
	07.00		51.00											
Vol.	44	_	106	_	_	_	_	_	_	_	_	_	_	



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Start		EB											Tue	
Time	A.M.		P.M.										18-Aug- 15	
12:00	9		10											
12:15	3		7											
12:30	2		4											
12:45	1	15	13	34										
01:00	Ö	13	10	J 1										
01.00			7											
01:15	1		7											
01:30	1	_	9											
01:45	0	2	9	35										
02:00	0		12											
02:15	0		14											
02:30	2		13											
02:45	3	5	13	52										
03:00	0	J	15	02										
03.00	0													
03:15	2		11											
03:30	0	_	18											
03:45	0	2	10	54										
04:00	1		10											
04:15	1		8											
04:30	3		5											
04:45	0	5	9	32										
05:00	1	Ü	11	0_										
05:15	3		13											
05.15	3		13											
05:30	2		14											
05:45	2	8	15	53										
06:00	5		8											
06:15	4		19											
06:30	2		28											
06:45	1	12	24	79										
07:00	5		37											
07:15	8		47											
07:30	6		37											
07.30	10	0.4	37	450										
07:45	12	31	38	159										
08:00	8		44											
08:15	24		52											
08:30	15		78											
08:45	8	55	26	200										
09:00	3		35											
09:15	7		28											
09:13														
09.30	1	40	18	00										
09:45	7	18	17	98										
10:00	3		10											
10:15	3		11											
10:30	3		8											
10:45	6	15	1	30										
11:00	7		3											
11:15	4		9											
11:30	6		8											
11:36	7	24	5	25										
11:45	100	24												
Total Percent	192	4.	851 00.0%		0.0%		0.0%							
reideni			00.0%		0.076		U.U70							
Day Total		1043												
Peak	07:45	-	07:45	-	-	-	-	-	-	-	-	-	-	
Vol.	59	-	212	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.615		0.679											



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 ATR D Class Site Code: 13220.00 Date Start: 15-Aug-15

SB

Start			Linaii. dat	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	80	0	15	0	0	95
01:00	0	0	40	1	11	1	0	53
02:00	0	0	114	0	4	2	0	120
03:00	0	0	38	1	2	1	0	42
04:00	0	0	31	0	9	1	2	43
05:00	0	0	52	1	11	0	0	64
06:00	0	1	62	0	18	0	0	81
07:00	0	0	74	3	21	7	0	105
08:00	0	0	144	2	26	2	0	174
09:00	0	0	79	1	22	0	1	103
10:00	0	0	81	1	25	2	1	110
11:00	0	0	70	0	25	1	0	96
12 PM	0	0	134	2	20	1	0	157
13:00	0	0	254	3	22	1	0	280
14:00	0	0	351	2	25	5	0	383
15:00	0	0	376	5	37	0	0	418
16:00	0	0	422	3	33	2	0	460
17:00	0	0	267	10	33	0	0	310
18:00	0	0	285	2	31	3	0	321
19:00	0	0	399	4	32	1	0	436
20:00	0	0	394	1	33	0	0	428
21:00	0	0	528	4	38	0	0	570
22:00	0	0	512	7	27	0	0	546
23:00	0	0	284	6	23	0	0	313
Total	0	1	5071	59	543	30	4	5708
Percent	0.0%	0.0%	88.8%	1.0%	9.5%	0.5%	0.1%	0.0%
AM Peak		06:00	08:00	07:00	08:00	07:00	04:00	08:00
Vol.		1	144	3	26	7	2	174
PM Peak			21:00	17:00	21:00	14:00		21:00
Vol.			528	10	38	5		570

Vol.



154582 ATR D Class Site Code: 13220.00 Date Start: 15-Aug-15

SB

SB			Email: dat	tarequests@pdillc.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	214	0	15	1	0	230
01:00	0	0	46	0	13	0	0	59
02:00	0	0	30	0	1	0	0	31
03:00	0	0	22	0	6	0	0	28
04:00	0	0	31	0	10	4	0	45
05:00	0	0	30	0	8	1	0	39
06:00	0	1	97	3	13	0	0	114
07:00	0	0	67	3	21	1	0	92
08:00	0	0	176	2	17	9	0	204
09:00	0	0	68	3	22	2	1	96
10:00	0	0	46	3	19	3	0	71
11:00	0	0	88	0	27	0	0	115
12 PM	0	0	157	1	28	2	0	188
13:00	0	0	280	2	33	0	0	315
14:00	0	0	436	8	39	1	0	484
15:00	0	0	383	3	40	0	0	426
16:00	0	0	375	3	38	1	0	417
17:00	0	0	186	9	37	1	0	233
18:00	0	1	472	3	41	0	0	517
19:00	0	0	568	12	43	0	0	623
20:00	0	0	482	1	41	0	0	524
21:00	0	0	468	1	37	0	1	507
22:00	0	0	257	1	26	4	0	288
23:00	0	0	169	2	28	0	0	199
Total	0	2	5148	60	603	30	2	5845
Percent	0.0%	0.0%	88.1%	1.0%	10.3%	0.5%	0.0%	0.0%
AM Peak		06:00	00:00	06:00	11:00	08:00	09:00	00:00
Vol.		1	214	3	27	9	1	230
PM Peak		18:00	19:00	19:00	19:00	22:00	21:00	19:00
Val		4	FC0	10	40	1	4	600

12

43

568



154582 ATR D Class Site Code: 13220.00 Date Start: 15-Aug-15

16:00

21:00

19:00

SB

PM Peak

Vol.

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Start Single Unit Articulated Light Time **Bicylcles** Motorcycles Cars Trucks Buses Heavy Trucks Total 08/17/15 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12 PM O 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 Total Percent 0.0% 0.1% 85.4% 2.1% 11.5% 0.7% 0.2% 0.0% 08:00 08:00 08:00 AM Peak 06:00 08:00 09:00 11:00 Vol

19:00

21:00

16:00

20:00

Vol.



154582 ATR D Class Site Code: 13220.00 Date Start: 15-Aug-15

SB

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com Start Single Unit Articulated Light Time **Bicylcles** Motorcycles Cars Trucks Buses Heavy Trucks Total 08/18/15 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12 PM 13:00 14:00 n 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00 Total Percent 0.0% 0.0% 85.9% 1.8% 11.4% 0.8% 0.1% 0.0% 08:00 07:00 08:00 AM Peak 09:00 07:00 04:00 Vol PM Peak 21:00 18:00 19:00 21:00 12:00 21:00



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Start		SB											Sat	
Time	A.M.		P.M.										15-Aug- 15	
12:00	28		25											
12:15	25		40											
12:30	16		47											
12:45	26	95	45	157										
01:00	7		67											
01:15	12		81											
01:30	11		70											
01:45	23	53	62	280										
02:00	39		81											
02:15 02:30	38		64											
02:30	24		102											
02:45	19	120	136	383										
03:00	14	0	109	000										
03:15	8		90											
03:15 03:30	6		111											
03:45	14	42	108	418										
04:00	8	72	108	710										
04.00	7		137											
04:15 04:30	14		115											
04:30	14	43	100	460										
05:00	14	43	70	460										
05:00	14		70 52											
05:15	13		53											
05:30	19	0.4	86	040										
05:45	18	64	101	310										
06:00	26		80											
06:15	20		85											
06:30	17		97											
06:45	18	81	59	321										
07:00	23		65											
07:15	25		105											
07:30	30		141											
07:45	27	105	125	436										
08:00	36		101											
08:15	31		122											
08:30	38		111											
08:45	69	174	94	428										
09:00	30		148	0										
09:15	20		179											
09:30	21		110											
09:45	32	103	133	570										
10:00	27	100	149	370										
10.00	20		154											
10:15	29 25		104											
10:30	25	110	132	E 40										
10:45	29	110	111	546										
11:00	27		63											
11:15	19		63											
11:30	29		72	0:-										
11:45	21	96	115	313										
Total Percent	1086		4622 100.0%		0.0%		0.0%							
Day Total		570												
Peak	08:00	-	09:15	-	-	-	-	-	-	-	-	-	-	
Vol. P.H.F.	174 0.630	-	571 0.797	-	-	-	-	-	-	-	-	-	-	
	0.600													



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Start		SB											Sun	
Time	A.M.		P.M.										16-Aug- 15	
12:00	110		46											
12:15	70		37											
12:30	25		37											
12:45	25	230	68	188										
01:00	17		67											
01:15	16		85											
01:30	9		75											
01:45	17	59	88	315										
02:00	15	00	108	0.0										
02:15	3		137											
02:30	3 5 8		105											
02:45	8	31	134	484										
03:00	8	31	114	707										
03:15	10		92											
03:30	10		136											
03:45	0	28	84	426										
03.45	8 2 4	20	04 75	420										
04:00	4		75											
04:15	15 15		111											
04:30	15	45	127	447										
04:45	11	45	104	417										
05:00	5		69											
05:15	14		63											
05:30	6		38											
05:45	14	39	63	233										
06:00	24		111											
06:15	28		120											
06:30	39		132											
06:45	23	114	154	517										
07:00	27		156											
07:15	18		147											
07:30	27		164											
07:45	20	92	156	623										
08:00	43		96											
08:15	47		123											
08:30	62		144											
08:45	52	204	161	524										
09:00	33		169											
09:15	19		128											
09:30	21		118											
09:45	23	96	92	507										
10:00	19	50	51											
10:15	18		42											
10:30	16		93											
10:45	18	71	102	288										
11:00	18		72	200										
11:15	35		61											
11:30	22		28											
11:45	40	115	38	199										
Total	1124	115	4721	133										
Percent	1124	1	100.0%		0.0%		0.0%							
Day Total		5845)											
Peak	12:00	_	07:00	_	_	_	_	_	-	_	_	_	_	
Vol.	230	_	623	_	_	-	_	_	_	_	_	_	_	
VOI.														



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Start		SB											Mon	
Time	A.M.		P.M.										17-Aug- 15	
12:00	23		34											
12:15	30		33											
12:30	19		62											
12:45	17	89	76	205										
01:00	18		61											
01:15	27		71											
01:30	20		83											
01:45	19	84	126	341										
02:00	11		120											
02:15	4		115											
02:15 02:30	3		81											
02:45	2	20	90	406										
03:00	9	_0	98											
03:15	6		88											
03:15 03:30	9		122											
03:45	8	32	91	399										
04:00	10	02	87	000										
04:00	13		96											
04:15 04:30	15		91											
04:45	16	54	91	365										
05:00	17	34	103	303										
05:00	27		92											
05:30	27		92											
05:30	26	0.4	87 65	247										
05:45	24	94	65	347										
06:00	32		83											
06:15	20		85											
06:30	28	400	79	004										
06:45	28	108	87	334										
07:00	24		136											
07:15	30		161											
07:30	36		125											
07:45	44	134	168	590										
08:00	50		168											
08:15	81		111											
08:30	61		144											
08:45	47	239	157	580										
09:00	37		160											
09:15	25		137											
09:30	35		134											
09:45	28	125	79	510										
10:00	20		46											
10:15	27		46											
10:30	28		59											
10:45	27	102	76	227										
11:00	32		50											
11:15	44		53											
11:30	35		91											
11:45	34	145	59	253										
Total	1226		4557										-	
Percent		1	100.0%		0.0%		0.0%							
Day Total		5783	3											
Dools	00.00		07:15											
Peak	08:00	-	07:15	-	-	-	-	-	-	-	-	-	-	
Vol.	239	-	622	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.738		0.926											



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Time 12:00 12:15	A.M.		P.M.											
12:00 12:15													18-Aug- 15	
12:15	39		27											
40.00	40		29											
12:30	25	404	48											
12:45	20	124	43	147										
01:00	11		57											
01:15	25		52											
01:30	16	0.4	59	054										
01:45	12	64	83	251										
02:00	8		66											
02:15	13		92											
02:30	8	0.7	113	200										
02:45	8	37	117	388										
03:00	8		94											
03:15	10		66											
03:30	9	00	75 70	040										
03:45	5	32	78	313										
04:00	5		89											
04:15	9		81											
04:30	16	40	67	000										
04:45	10	40	52	289										
05:00	15		72											
05:15	30		96											
05:30	19	70	110	207										
05:45	15	79	109	387										
06:00	25		109											
06:15	25		116											
06:30	40	400	118	400										
06:45	32	122	139	482										
07:00	54		132											
07:15	44		119											
07:30 07:45	19	147	137 141	529										
07.43	30 29	147	135	529										
08:00 08:15														
08:30	47 42		113 131											
08:45	52	170	164	543										
09:00	53	170	174	545										
09:00	33 44		159											
09.15	41													
09.30	36 34	164	146	599										
10:00	21	104	120 101	599										
10:00	26		101											
10:13	23		70											
10:30	23 27	97	45	321										
11:00	31	91	64	321										
11:15	33		48											
11:30	36		79											
11:45	23	123	82	273										
Total	1199	120	4522	210										
Percent	1100	1	00.0%		0.0%	0	.0%							
Day Total		5721												
Peak	08:15	_	08:45	_	-	_	_	_	_	_	_	_	_	_
Vol.	194	-	643	-	-	-	_	-	-	-	-	-	-	_
P.H.F.	0.898		0.924											



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_	_
9	R
J	ט

Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	5	0	0	0	0	5
01:00	0	0	5	0	0	0	0	5
02:00	0	0	3	0	0	0	0	3
03:00	0	0	1	1	0	0	0	2
04:00	0	0	1	0	1	1	0	3
05:00	0	0	13	0	2	0	0	15
06:00	0	0	30	0	4	0	0	34
07:00	0	0	10	0	0	0	0	10
08:00	0	0	5	0	2	0	0	7
09:00	0	0	3	0	2	0	0	5
10:00	0	0	6	0	0	0	0	6
11:00	0	0	18	0	2	0	0	20
12 PM	0	0	20	1	3	0	0	24
13:00	0	0	20	1	3	0	0	24
14:00	0	0	52	0	2	0	0	54
15:00	0	0	48	0	1	0	0	49
16:00	0	0	42	1	2	0	0	45
17:00	0	0	47	1	2	0	0	50
18:00	0	0	68	3	1	0	0	72
19:00	0	0	104	1	2	0	0	107
20:00	0	0	78	1	0	0	0	79
21:00	0	0	17	0	1	0	0	18
22:00	0	0	15	0	1	0	0	16
23:00	0	0	14	0	1	0	0	15
Total	0	0	625	10	32	1	0	668
Percent	0.0%	0.0%	93.6%	1.5%	4.8%	0.1%	0.0%	0.0%
AM Peak			06:00	03:00	06:00	04:00		06:00
Vol.			30	1	4	1		34
PM Peak			19:00	18:00	12:00			19:00
Vol.			104	3	3			107



154582 ATR E Class Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com

CD				08.481.3999 Fax: 508.54			Date S	start: 15-Aug-15
SB			Emai	l: datarequests@pdillc.c	com	Oin ala I lait	A t' t	
Start	Disulata	Matauarialaa	0	Light	D	Single Unit	Articulated	Takal
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/		0	4	0	0	0	0	4
01:		0	3	0	0	0	0	3
02:		0	2	0	0	0	0	2
03:		0	0	0	2	0	0	2
04:		0	4	1	0	0	0	5
05:		0	10	0	0	0	0	10
06:		0	30	1	2	0	0	33
07:		0	19	0	0	0	0	19
08:	00 0	0	11	0	0	0	0	11
09:	00 0	0	9	0	0	0	0	9
10:	00 0	0	13	0	2	0	0	15
11:	00 0	0	17	1	4	0	0	22
12 F	PM 0	0	13	0	1	0	0	14
13:		0	23	0	3	0	0	26
14:	00 0	0	50	3	1	0	0	54
15:	00 0	0	51	3	0	0	0	54
16:	00 0	0	50	2	3	0	0	55
17:	00 0	0	54	2	3	0	0	59
18:	00 0	0	108	5	5	0	0	118
19:	00 0	0	96	1	1	0	0	98
20:		0	66	2	2	0	0	70
21:		0	32	0	0	0	0	32
22:		0	11	1	0	0	0	12
23:		0	0	0	0	0	0	0
To		0	676	22	29	0	0	727
Perce		0.0%	93.0%	3.0%	4.0%	0.0%	0.0%	0.0%
AM Pe			06:00	04:00	11:00			06:00
	ol.		30	1	4			33
PM Pe			18:00	18:00	18:00			18:00
	ol.		108	5	5			118
•	•		100	U	U			1.10



154582 E Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

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 			El la la data	arequestse pamereoni				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/24/15	0	0	2	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0
02:00	0	0	0	0	0	0	0	0
03:00	0	0	1	0	1	0	0	2
04:00	0	0	4	0	1	1	0	6
05:00	0	0	15	0	3	0	0	18
06:00	0	0	22	3	1	0	0	26
07:00	0	0	12	0	1	0	0	13
08:00	0	0	8	1	1	0	0	10
09:00	0	0	10	0	0	1	0	11
10:00	0	0	6	0	3	0	0	9
11:00	0	0	17	1	2	3	0	23
12 PM	0	0	10	0	2	0	0	12
13:00	0	0	25	1	4	1	0	31
14:00	0	0	39	0	1	1	0	41
15:00	0	0	57	1	0	0	0	58
16:00	0	0	53	1	0	0	0	54
17:00	0	0	44	5	3	0	0	52
18:00	0	0	82	1	2	0	0	85
19:00	0	0	97	1	1	0	0	99
20:00	0	0	66	0	1	0	0	67
21:00	0	0	29	0	1	0	0	30
22:00	0	0	15	1	1	0	0	17
23:00	0	0	19	0	0	0	0	19
Total	0	0	633	16	29	7	0	685
Percent	0.0%	0.0%	92.4%	2.3%	4.2%	1.0%	0.0%	0.0%
AM Peak			06:00	06:00	05:00	11:00		06:00
Vol.			22	3	3	3		26
PM Peak			19:00	17:00	13:00	13:00		19:00
Vol.			97	5	4	1		99

PRECISION D A T A INDUSTRIES, LLC

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SB

Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/25/15	0	0	2	0	0	0	0	2
01:00	0	0	0	0	0	0	0	0
02:00	0	0	1	0	0	0	0	1
03:00	0	0	1	0	0	0	0	1
04:00	0	0	4	0	0	0	0	4
05:00	0	0	10	0	2	0	0	12
06:00	0	0	11	0	3	0	1	15
07:00	0	0	11	1	1	0	0	13
08:00	0	0	2	0	0	1	0	3
09:00	0	0	8	0	1	0	0	9
10:00	0	0	8	0	0	0	0	8
11:00	0	0	14	5	2	1	0	22
12 PM	0	0	16	3	0	1	0	20
13:00	0	0	18	0	5	1	0	24
14:00	0	0	41	1	1	0	0	43
15:00	0	0	37	1	0	0	0	38
16:00	0	0	47	1	0	0	0	48
17:00	0	0	51	1	1	0	0	53
18:00	0	0	89	3	2	0	0	94
19:00	0	0	72	3	1	0	0	76
20:00	0	0	53	2	1	0	0	56
21:00	0	0	30	0	2	0	0	32
22:00	0	0	17	0	1	0	0	18
23:00	0	0	16	0	0	0	0	16
Total	0	0	559	21	23	4	1	608
Percent	0.0%	0.0%	91.9%	3.5%	3.8%	0.7%	0.2%	0.0%
AM Peak			11:00	11:00	06:00	08:00	06:00	11:00
Vol.			14	5	3	1	1	22
PM Peak			18:00	12:00	13:00	12:00		18:00
Vol.			89	3	5	1		94



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12:00 12:15 12:30 12:45 01:00 01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	A.M. 1 3 0 1 2 1 2 0 2 0 1 0 1 0	5	P.M. 6 7 4 7 4 7 5 8 15	24									15-Aug- 15	
12:15 12:30 12:45 01:00 01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 05:45 05:30 05:45 06:00 06:15 06:30 06:45 07:30 07:45	3 0 1 2 1 2 0 2 0 1 0 1		7 4 7 4 7 5 8											
12:15 12:30 12:45 01:00 01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	0 1 2 1 2 0 2 0 1 0		4 7 4 7 5 8											
12:30 12:45 01:00 01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 06:30 06:45 06:00 06:15 06:30 06:45 07:30 07:45	0 1 2 1 2 0 2 0 1 0		4 7 4 7 5 8											
12:45 01:00 01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 06:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	1 2 1 2 0 2 0 1 0		7 4 7 5 8											
01:00 01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 06:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	2 1 2 0 2 0 1 0		4 7 5 8											
01:15 01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 06:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	1 2 0 2 0 1 0	5	7 5 8	24										
01:30 01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	2 0 2 0 1 0 1	5	5 8	24										
01:45 02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	0 2 0 1 0	5	8	24										
02:00 02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	2 0 1 0 1	5	8 15											
02:15 02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 06:30 06:45 06:00 06:15 06:30 07:15 07:30 07:45	0 1 0 1		15	24										
02:30 02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 06:30 06:45 06:00 06:15 06:30 07:15 07:30 07:45	1 0 1		. •											
02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 06:30 06:45 07:00 07:15 07:30 07:45	0 1		13											
02:45 03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 06:30 06:45 07:00 07:15 07:30 07:45	1		15											
03:00 03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 06:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	1	3	11	54										
03:15 03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:15 07:30 07:45			15											
03:30 03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45			12											
03:45 04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	0		12											
04:00 04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:15 07:30 07:45		2	12	49										
04:15 04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:15 07:30 07:45	1	2	10	49										
04:30 04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	1		11											
04:45 05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	1		16											
05:00 05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	0		10											
05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	1	3	8	45										
05:15 05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	4		12											
05:30 05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	2		9											
05:45 06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	3		13											
06:00 06:15 06:30 06:45 07:00 07:15 07:30 07:45	6	15	16	50										
06:15 06:30 06:45 07:00 07:15 07:30 07:45		13		30										
06:30 06:45 07:00 07:15 07:30 07:45	9		20											
06:45 07:00 07:15 07:30 07:45	6		18											
07:00 07:15 07:30 07:45	9		13											
07:15 07:30 07:45	10	34	21	72										
07:15 07:30 07:45	6		26											
07:30 07:45	0		23											
07:45	2		33											
07.43	2	10	25	107										
00.00	2	10	25	107										
08:00	0		25											
08:15	3		22											
08:30	2		17											
08:45	2	7	15	79										
09:00	2 2		6											
09:15	3		3											
09:30	0		5											
09:45	Ö	5	4	18										
10:00	2	•	6											
10:15	1		4											
10.10	2													
10:30	3	^	3	40										
10:45	0	6	3	16										
11:00	6		4											
11:15	4		6											
11:30	6		3											
11:45	4	20	2	15										
Total	115		553				=					=	-	
Percent		10	00.0%		0.0%	0.	.0%							
Day Total		668												
Peak 06	6:00	_	07:00	_	_	_	_	_	_	_	_	_	_	
reak UC	34	-	107	-	-	-	-	-	-	-	-	-	-	
Vol. P.H.F. 0.8		-	107 0.811	-	-	-	-	-	-	-	-	-	-	



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Start		SB											Sun	
Time	A.M.		P.M.										16-Aug- 15	
12:00	1	· · · · · · · · · · · · · · · · · · ·	5											
12:15	2		3											
12:30	1		3											
12:45	0	4	3	14										
01:00	1		7											
01:15	2		7											
01:30	0		6											
01:45	0	3	6	26										
02:00	2		7											
02:15	0		20											
02:30	0		13											
02:45	0	2	14	54										
03:00	0		13											
03:15	0		17											
03:30	0		7											
03:45	2	2	17	54										
04:00	1		11											
04:15	1		14											
04:30	2		16											
04:45	1	5	14	55										
05:00	1	_	14											
05:15	1		13											
05:30	4		14											
05:45	4	10	18	59										
06:00	6	.0	27	00										
06:15	12		32											
06:30	10		23											
06:45	5	33	36	118										
00.45	3	33	28	110										
07:00	3		40											
07:15	4		18											
07:30	7	40	28	00										
07:45	5	19	24	98										
08:00	5		14											
08:15	1		19											
08:30	3	4.4	17	70										
08:45	2	11	20	70										
09:00	3		12											
09:15	4		12											
09:30	0	•	6	00										
09:45	2	9	2	32										
10:00	0		3											
10:15	5		5											
10:30	6		3											
10:45	4	15	1	12										
11:00	2		0											
11:15	5		0											
11:30	5		0											
11:45	10	22	0	0										
Total Percent	135	10	592 00.0%		0.0%	(0.0%							
Day Total		727												
	00.55		00.4-											
Peak	06:00	-	06:15	-	-	-	-	-	-	-	-	-	-	-
Vol.	33	-	119	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.688		0.826											



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154582 E Volume Redo Site Code: 13220.00 Date Start: 24-Aug-15

Start		SB											Mon	
Time	A.M.		P.M.										24-Aug- 15	
12:00	0		2										15	
12:15	1		4											
12:30	Ö		2											
12:45	1	2	4	12										
01:00	0	_	7	12										
01:15	0		3											
01:30	0		9											
01:45	0	0	12	31										
02:00		U	13	31										
02.00	0													
02:15	0		11											
02:30	0	•	10	4.4										
02:45	0	0	7	41										
03:00	0		13											
03:15	0		17											
03:30	1		8											
03:45	1	2	20	58										
04:00	1		16											
04:15	2		11											
04:30	0		12											
04:45	3	6	15	54										
05:00	6		17											
05:15	3		9											
05:30	5		17											
05:45	4	18	9	52										
06:00	11		20											
06:15	9		23											
06:30	5		25											
06:45	1	26	17	85										
07:00	5	20	22	00										
07:15	3		29											
07:13	1		24											
07.30		13		00										
07:45	4	13	24	99										
08:00	4		20											
08:15	1		10											
08:30	4	4.0	19											
08:45	1	10	18	67										
09:00	0		8											
09:15	3		10											
09:30	4		8											
09:45	4	11	4	30										
10:00	2		6											
10:15	3		5											
10:30	2		2											
10:45	2	9	4	17										
11:00	5		7											
11:15	8		1											
11:30	8		7											
11:45	2	23	4	19										
Total	120		565											
Percent		1	00.0%		0.0%	0.0	0%							
Day Total		685												
Peak	05:30	_	07:00	_	_	_	_	_	_	_	_	_	_	
Vol.	29	_	99	_	-	_	_	_	_	_	_	_	_	
VOI.														



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154582 E Volume Redo Site Code: 13220.00 Date Start: 24-Aug-15

Start		SB											Tue	
Time	A.M.		P.M.										25-Aug- 15	
12:00	2		10										10	
12:15	0		3											
12:30	0		5											
12:45	Ö	2	2	20										
01:00	0	_	1	20										
01:00	0		6											
01.15			0											
01:30	0	•	9											
01:45	0	0	8	24										
02:00	1		12											
02:15	0		10											
02:30	0		12											
02:45	0	1	9	43										
03:00	0		10											
03:15	Ö		12											
03:30	1		9											
03:45		4		38										
03:45	0	1	7	38										
04:00	0		8											
04:15	1		10											
04:30	2		9											
04:45	1	4	21	48										
05:00	3		14											
05:15	0		14											
05:30	2		14											
05:45	7	12	11	53										
06:00	4	12	18	00										
00.00			10											
06:15	5		27											
06:30	2		24											
06:45	4	15	25	94										
07:00	2		21											
07:15	4		25											
07:30	4		21											
07:45	3	13	9	76										
08:00	1	10	15											
08:15	0		13											
00.10			13											
08:30	1	•	18											
08:45	1	3	10	56										
09:00	1		9											
09:15	1		12											
09:30	4		7											
09:45	3	9	4	32										
10:00	3		4											
10:15	1		4											
10:30	3		4											
10:30	1	8	6	18										
10.40		0	o O	10										
11:00	6		6											
11:15	6		5											
11:30	2		4											
11:45	8	22	1	16										
Total	90		518											
Percent		1	00.0%		0.0%		0.0%							
Day Total		608												
Peak	11:00		06:15										_	
гeaк	11.00	-	06:15	-	-	-	-	-	-	-	-	-	-	
Vol.	22	_	97	_	_	_	_	_	_	_	_	_	_	

Vol.

Vol.

AM Peak

PM Peak



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154582 ATR F CLASS Site Code: 13220.00 Date Start: 15-Aug-15

SB				31.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Start	. 13-Aug-13
Start			Email ad	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	12	4	10	0	0	26
01:00	0	0	5	0	9	0	0	14
02:00	0	0	0	0	13	0	0	13
03:00	0	0	7	0	14	1	0	22
04:00	0	0	12	0	12	1	0	25
05:00	0	0	24	1	23	0	0	48
06:00	0	0	41	2	20	1	0	64
07:00	0	0	26	0	23	0	0	49
08:00	0	0	18	0	21	1	0	40
09:00	0	0	24	2	28	1	0	55
10:00	0	0	24	0	29	1	0	54
11:00	0	0	44	0	29	1	0	74
12 PM	0	0	39	1	40	0	0	80
13:00	0	0	53	0	37	1	0	91
14:00	0	0	91	4	34	1	0	130
15:00	0	0	67	0	38	0	0	105
16:00	0	0	69	1	37	0	0	107
17:00	0	0	96	2	35	1	0	134
18:00	0	0	132	7	41	2	0	182
19:00	0	0	150	5	33	0	0	188
20:00	0	0	108	1	35	1	0	145
21:00	0	0	62	1	23	0	0	86
22:00	0	0	25	2	16	0	0	43
23:00	0	0	14	2	17	1	0	34
Total	0	0	1143	35	617	14	0	1809
Percent	0.0%	0.0%	63.2%	1.9%	34.1%	0.8%	0.0%	0.0%
AMAD			44.00	00.00	40.00	20.00		44.00

00:00

18:00 7

10:00

18:00

29

41

03:00

18:00

2

11:00

19:00

188

74

11:00

19:00

150

44

D A T A INDUSTRIES, LLC P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com

154582 ATR F CLASS Site Code: 13220.00 Date Start: 15-Aug-15

SB

OD				Littali. data	arequests@painc.com				
	Start				Light		Single Unit	Articulated	
	Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
	08/16/15	0	0	22	2	7	0	0	31
	01:00	0	0	6	0	8	0	0	14
	02:00	0	0	4	1	10	0	0	15
	03:00	0	0	5	0	15	0	0	20
	04:00	0	0	14	0	17	0	0	31
	05:00	0	0	23	1	18	0	0	42
	06:00	0	0	37	2	12	0	0	51
	07:00	0	0	26	0	25	0	0	51
	08:00	0	0	15	1	22	2	0	40
	09:00	0	1	15	1	25	0	0	42
	10:00	0	0	27	0	26	1	0	54
	11:00	0	0	40	2	30	0	0	72
	12 PM	0	0	39	0	34	0	0	73
	13:00	0	0	45	1	39	1	0	86
	14:00	0	0	84	3	40	2	0	129
	15:00	0	0	109	2	38	0	0	149
	16:00	0	0	102	5	43	1	0	151
	17:00	0	0	129	2	40	1	0	172
	18:00	0	0	149	4	36	4	0	193
	19:00	0	0	150	2	38	0	0	190
	20:00	0	0	121	7	31	2	0	161
	21:00	0	0	51	1	23	0	0	75
	22:00	0	0	11	1	12	0	0	24
	23:00	0	0	3	2	17	0	0	22
	Total	0	1	1227	40	606	14	0	1888
	Percent	0.0%	0.1%	65.0%	2.1%	32.1%	0.7%	0.0%	0.0%
	AM Peak		09:00	11:00	00:00	11:00	08:00		11:00
	Vol.		1	40	2	30	2		72
	PM Peak			19:00	20:00	16:00	18:00		18:00
	Vol.			150	7	43	4		193

PRECISION D A T A INDUSTRIES, LLC

Terminal E Departures Level Exit Ramp to Service Road City, State: Boston, MA Client: VHB/ A. Costa

> P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com

154582 F CLASS Redo Site Code: 13220.00 Date Start: 24-Aug-15

C	D
o	D

Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/24/15	0	0	3	1	8	2	0	14
01:00	0	0	0	2	6	1	0	9
02:00	0	0	2	0	8	0	0	10
03:00	0	0	4	0	15	0	0	19
04:00	0	0	17	0	13	2	0	32
05:00	0	0	33	1	18	1	0	53
06:00	0	0	38	1	20	0	0	59
07:00	0	0	34	1	26	0	0	61
08:00	0	0	24	2	26	5	0	57
09:00	0	0	21	3	28	3	0	55
10:00	0	0	13	2	24	2	0	41
11:00	0	0	36	1	29	2	0	68
12 PM	0	0	47	5	42	6	0	100
13:00	0	0	62	3	34	3	0	102
14:00	0	0	92	2	34	5	0	133
15:00	0	0	102	5	42	1	0	150
16:00	0	0	90	4	39	1	0	134
17:00	0	0	127	4	40	2	0	173
18:00	0	0	117	3	40	0	0	160
19:00	0	0	154	1	45	0	0	200
20:00	0	0	114	1	32	3	0	150
21:00	0	0	43	1	27	0	0	71
22:00	0	0	31	3	17	0	0	51
23:00	0	0	21	0	13	0	0	34
Total	0	0	1225	46	626	39	0	1936
Percent	0.0%	0.0%	63.3%	2.4%	32.3%	2.0%	0.0%	0.0%
AM Peak			06:00	09:00	11:00	08:00		11:00
Vol.			38	3	29	5		68
PM Peak			19:00	12:00	19:00	12:00		19:00
Vol.			154	5	45	6		200



154582 F CLASS Redo Site Code: 13220.00 Date Start: 24-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com

SB				1.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Start	. 24-Aug-13
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/25/15	0	0	8	2	8	0	0	18
01:00	0	0	5	0	6	1	0	12
02:00	0	0	1	1	10	0	0	12
03:00	0	0	6	0	12	0	0	18
04:00	0	0	18	1	11	1	0	31
05:00	0	0	31	3	25	2	0	61
06:00	0	0	44	3	22	5	0	74
07:00	0	0	26	3	32	1	1	63
08:00	0	0	15	1	26	3	0	45
09:00	0	0	20	3	33	5	0	61
10:00	0	0	27	3	31	2	0	63
11:00	0	0	34	1	34	1	0	70
12 PM	0	0	42	4	35	2	0	83
13:00	0	0	63	1	33	1	0	98
14:00	0	0	87	4	43	2	0	136
15:00	0	0	71	0	37	3	0	111
16:00	0	0	126	2	42	2	0	172
17:00	0	0	132	7	36	0	0	175
18:00	0	0	179	4	39	2	0	224
19:00	0	0	164	0	41	0	0	205
20:00	0	0	110	2	30	0	0	142
21:00	0	0	47	2	27	2	0	78
22:00	0	0	40	2	17	0	0	59
23:00	0	0	18	0	13	0	0	31
Total	0	0	1314	49	643	35	1	2042
Percent	0.0%	0.0%	64.3%	2.4%	31.5%	1.7%	0.0%	0.0%
AM Peak			06:00	05:00	11:00	06:00	07:00	06:00
Vol.			44	3	34	5	1	74
PM Peak			18:00	17:00	14:00	15:00		18:00
Vol.			179	7	43	3		224



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 ATR F VOLUME Site Code: 13220.00 Date Start: 15-Aug-15

Start		SB											Sat	
Time	A.M.		P.M.										15-Aug- 15	
12:00	4		17										10	
12:15	10		15											
12:30	6		28											
12:45	6	26	20	80										
01:00	5		20											
01:15	4		24											
01:30	2		21											
01:45	3	14	26	91										
02:00	2		32	0.										
02:15	2		24											
02:30	5		37											
02:45	4	13	37	130										
03:00	3	13	25	130										
03:00	5		30											
03:30	7		24											
03.30	7	22	24	105										
03:45	7	22	26	105										
04:00	4		21											
04:15	4		33											
04:30	8	0.5	25	407										
04:45	9	25	28	107										
05:00	12		26											
05:15	11		39											
05:30	12		35											
05:45	13	48	34	134										
06:00	16		43											
06:15	21		51											
06:30	16		37											
06:45	11	64	51	182										
07:00	13		50											
07:15	14		46											
07:30	13		42											
07:45	9	49	50	188										
08:00	12		41											
08:15	11		29											
08:30	9		37											
08:45	8	40	38	145										
09:00	12	70	28	170										
09:00	11		26 25											
09:13	17		18											
09:30	17	55	15	86										
10:00	10 40	33	10	00										
10:00	10		13											
10:15	13		8											
10:30	18	E 4	11	40										
10:45	13	54	11	43										
11:00	20		7											
11:15	20		11											
11:30	15		5	٠.										
11:45	19	74	11	34										
Total Percent	484	4	1325 100.0%		0.0%		0.0%							
Day Total		1809			0.070		0.070							
,														
Peak	11:00	-	06:15	-	-	-	-	-	-	-	-	-	-	
Vol. P.H.F.	74 0.925	-	189 0.926	-	-	-	-	-	-	-	-	-	-	



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Start		SB				Emaii: datareque	•						Sun	
Time	A.M.	28	P.M.										16-Aug-	
12:00	11		18										15	
12:15	11		14											
12.13	11													
12:30	6	04	25	70										
12:45	3	31	16	73										
01:00	5		19											
01:15	3		17											
01:30	3	4.4	27	00										
01:45	3	14	23	86										
02:00	3		22											
02:15	2		21											
02:30	5		46											
02:45	5	15	40	129										
03:00	4		38											
03:15	7		39											
03:30	5		39											
03:45	4	20	33	149										
04:00	8		38											
04:15	10		34											
04:30	7		41											
04:45	6	31	38	151										
05:00	9		43											
05:15	11		38											
05:30	13		43											
05:45	9	42	48	172										
06:00	8		45											
06:15	10		44											
06:30	19		51											
06:45	14	51	53	193										
07:00	14	31	38	133										
07:00			49											
07:13	8		54											
07.30	21	E4	40	100										
07:45	8	51	49	190										
08:00	7		42											
08:15	13		39											
08:30	7	40	51	404										
08:45	13	40	29	161										
09:00	8		20											
09:15	9		19											
09:30	15		22											
09:45	10	42	14	75										
10:00	13		8											
10:15	9		3											
10:30	17		7											
10:45	15	54	6	24										
11:00	19		8											
11:15	18		7											
11:30	19		3											
11:45	16	72	4	22										
Total	463		1425		,									
Percent		1	00.0%		0.0%	0	.0%							
Day Total		1888												
Day Total		1000												
Peak	11:00	-	06:45	-	-	-	-	-	-	-	-	-	-	-
Vol.	72	-	194	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.947		0.898											



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 F Volume Redo Site Code: 13220.00 Date Start: 24-Aug-15

Start		SB											Mon	
Γime	A.M.		P.M.										24-Aug- 15	
12:00	3		22										-	
12:15	6		19											
12:30	2		28											
12:45	3	14	31	100										
01:00	4		21											
01:15	3		24											
01:30	2		26											
01:45	0	9	31	102										
02:00	4	•	23											
02:15	1		21											
02:30	3		42											
02:45	2	10	47	133										
03:00	4	10	38	100										
03:15	4		32											
03:30	5		47											
03:45	6	19	33	150										
03:45	6	19	33 32	130										
04.00			32 29											
04:15	7		29											
04:30	9	20	36	404										
04:45	10	32	37	134										
05:00	12		28											
05:15	12		50											
05:30	11		45											
05:45	18	53	50	173										
06:00	20		32											
06:15	11		36											
06:30	13		38											
06:45	15	59	54	160										
07:00	12		50											
07:15	18		50											
07:30	19		54											
07:45	12	61	46	200										
08:00	15		44											
08:15	14		49											
08:30	14		31											
08:45	14	57	26	150										
09:00	11	31	20	150										
09:00	9		25											
09.15	19		25 11											
09:30	19	55	15	71										
10:00		ეე	10	7 1										
10:00	8		18											
10:15	11		11											
10:30	12		8											
10:45	10	41	14	51										
11:00	20		10											
11:15	14		6											
11:30	16		10											
11:45	18	68	8	34										
Total	478		1458											
Percent		1	00.0%		0.0%		0.0%							
ay Total		1936	i											
Peak	11:00	_	06:45	_	_	_	_	_	_	_	_	_	_	
· Jun	11.50		30.70											
Vol.	68	-	208	-	-	-	-	-	-	-	-	-	-	



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 F Volume Redo Site Code: 13220.00 Date Start: 24-Aug-15

Start		SB											Tue	
Time	A.M.		P.M.										25-Aug- 15	
12:00	5		17											
12:15	3		17											
12:30	7		26											
12:45	3	18	23	83										
01:00	6		27											
01:15	1		19											
01:30	3		27											
01:45	2	12	25	98										
02:00	3	12	32	30										
02:00	2		35											
02:15 02:30	3		37											
02:30	4	12	32	136										
02.43		12	3Z 3E	130										
03:00	3		25											
03:15 03:30	3		26											
03:30	6	40	24	444										
03:45	6	18	36	111										
04:00	6		45											
04:15 04:30	7		42											
04:30	9		39											
04:45	9	31	46	172										
05:00	11		40											
05:15	14		36											
05:30	18		48											
05:45	18	61	51	175										
06:00	19		52											
06:15	20		51											
06:30	15		58											
06:45	20	74	63	224										
07:00	15		49	:										
07:15	17		63											
07:30	14		47											
07:30	17	63	46	205										
08:00	12	03	40	203										
00.00	12		40 45											
08:15	17		45											
08:30	6	45	29	4.40										
08:45	10	45	28	142										
09:00	12		19											
09:15	17		20											
09:30	14		21											
09:45	18	61	18	78										
10:00	18		18											
10:15	14		17											
10:30	17		13											
10:45	14	63	11	59										
11:00	20		8											
11:15	16		4											
11:30	15		15											
11:45	19	70	4	31										
Total	528		1514											
Percent		1	00.0%		0.0%		0.0%							
ay Total		2042												
Peak	05:30	_	06:30	_	_	_	_	_	_	_	_	_	_	
	00.00	-	00.00	-	-	-	-	-	-	-	-	-	-	
Vol.	75	-	233	-	-	-	_	_	-	-	-	_	_	



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@odillc.com

154582 ATR G Class Site Code: 13220.00 Date Start: 15-Aug-15

WB				Office: 508.48	1.3999 Fax: 508.545.123	34		Date Start	:: 15-Aug-15
VVD	Start			Email: dat	arequests@pdillc.com Light		Single Unit	Articulated	
	Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
	08/15/15	Dicylcies 0	1	44	2	32	3	0	82
	01:00	0	0	13	3	24	3	0	43
	02:00	0	0	12	3	17	3	0	35
	03:00	0	0	23	0	17	1	0	41
	04:00	0	0	19	0	23	0	0	42
	05:00	0	0	19	2	30	1	0	52
	06:00	0	0	31	1	31	3	0	66
	07:00	0	0	37	0	32	4	0	73
	08:00	0	0	33	4	35	1	0	73
	09:00	0	0	19	4	43	2	0	68
	10:00	0	0	39	8	38	2	0	87
	11:00	0	0	38	3	48	1	0	90
	12 PM	0	0	38	4	44	2	0	88
	13:00	0	0	47	4	44	0	0	95
	14:00	0	0	75	4	50	1	0	130
	15:00	0	0	98	4	47	0	0	149
	16:00	0	0	74	9	49	2	0	134
	17:00	0	0	71	7	53	2	0	133
	18:00	0	0	62	6	53	2	0	123
	19:00	0	0	102	3	55	2	0	162
	20:00	0	0	100	3	31	23	0	157
	21:00	0	0	86	1	50	3	0	140
	22:00	0	0	65	7	28	12	0	112
	23:00	0	0	52	1	27	3	0	83
	Total	0	1	1197	83	901	76	0	2258
	Percent	0.0%	0.0%	53.0%	3.7%	39.9%	3.4%	0.0%	0.0%
	AM Peak		00:00	00:00	10:00	11:00	07:00		11:00
	Vol.		1	44	8	48	4		90
	PM Peak			19:00	16:00	19:00	20:00		19:00
	Vol.			102	9	55	23		162



154582 ATR G Class Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
WB
Email: datarequests@pdillc.com

VVD			Email: dat	arequests@pailic.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	43	6	31	5	0	85
01:00	0	0	32	7	24	1	0	64
02:00	0	0	13	2	15	0	0	30
03:00	0	0	18	1	17	0	0	36
04:00	0	0	9	0	22	1	0	32
05:00	0	0	23	1	30	0	0	54
06:00	0	0	23	4	37	2	0	66
07:00	0	0	17	2	39	0	0	58
08:00	0	0	48	1	37	1	0	87
09:00	0	0	24	3	43	3	0	73
10:00	0	0	36	4	41	0	0	81
11:00	0	0	29	7	44	1	0	81
12 PM	0	0	44	3	46	3	0	96
13:00	0	0	45	1	48	1	0	95
14:00	0	0	58	3	46	2	0	109
15:00	0	0	71	5	49	0	0	125
16:00	0	0	74	5	52	1	0	132
17:00	0	0	94	4	51	4	0	153
18:00	0	0	112	5	48	0	0	165
19:00	0	0	84	7	47	2	0	140
20:00	0	0	107	4	40	2	0	153
21:00	0	0	73	6	48	0	0	127
22:00	0	0	51	2	39	1	0	93
23:00	0	0	49	4	35	0	0	88
Total	0	0	1177	87	929	30	0	2223
Percent	0.0%	0.0%	52.9%	3.9%	41.8%	1.3%	0.0%	0.0%
AM Peak			08:00	01:00	11:00	00:00		08:00
Vol.			48	7	44	5		87
PM Peak			18:00	19:00	16:00	17:00	<u> </u>	18:00
Vol.			112	7	52	4		165

Percent

Vol.

Vol.

AM Peak

PM Peak

0.0%

0.1%

00:00

12:00

52.4%

08:00

18:00

58

113



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 ATR G Class Site Code: 13220.00 Date Start: 15-Aug-15

/B				31.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Glan	. 10 Aug 10
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	1	29	3	22	4	0	59
01:00	0	0	20	2	20	3	0	45
02:00	0	0	9	0	16	0	1	26
03:00	0	0	16	1	17	1	0	35
04:00	0	0	17	5	22	3	0	47
05:00	0	0	34	9	40	1	0	84
06:00	0	0	42	12	43	4	0	101
07:00	0	0	49	21	44	10	0	124
08:00	0	0	58	10	41	2	0	111
09:00	0	0	50	13	42	9	1	115
10:00	0	0	46	13	40	6	0	105
11:00	0	0	58	17	49	1	0	125
12 PM	0	1	55	10	39	6	0	111
13:00	0	0	76	16	47	2	0	141
14:00	0	0	74	16	46	2	0	138
15:00	0	1	87	17	48	2	1	156
16:00	0	0	89	16	51	1	0	157
17:00	0	0	76	14	46	2	0	138
18:00	0	0	113	10	48	0	0	171
19:00	0	0	104	12	50	3	0	169
20:00	0	0	89	11	46	1	0	147
21:00	0	0	85	6	46	4	0	141
22:00	0	0	60	3	35	3	0	101
23:00	0	0	50	9	39	0	0	98
Total	0	3	1386	246	937	70	3	2645
	0.00/	0.40/	EO 40/	0.00/	0 = 40/	0.00/	0.407	0.00/

9.3%

07:00

15:00

21

17

35.4%

11:00

16:00

49

51

2.6%

07:00

12:00

10

6

0.1%

02:00

15:00

0.0%

125

18:00

171



154582 ATR G Class Site Code: 13220.00 Date Start: 15-Aug-15

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VΒ				arequests@pdillc.com	51			_
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	40	11	29	0	0	80
01:00	0	1	11	6	20	3	0	41
02:00	0	0	8	5	14	0	0	27
03:00	0	0	9	4	17	2	0	32
04:00	0	0	13	6	23	1	0	43
05:00	0	1	39	8	34	4	0	86
06:00	0	0	47	14	41	3	0	105
07:00	0	0	68	18	42	9	0	137
08:00	0	0	55	11	40	5	0	111
09:00	0	0	45	21	52	4	0	122
10:00	0	0	59	16	47	4	0	126
11:00	0	0	78	18	54	8	0	158
12 PM	0	0	74	17	49	6	0	146
13:00	0	0	84	14	48	6	0	152
14:00	0	0	92	13	53	5	0	163
15:00	0	0	82	4	49	1	0	136
16:00	0	0	93	10	47	2	0	152
17:00	0	0	92	9	49	2	0	152
18:00	0	0	113	7	49	4	0	173
19:00	0	0	156	10	45	2	0	213
20:00	0	0	130	7	42	0	0	179
21:00	0	0	81	5	40	1	0	127
22:00	0	0	80	9	39	6	0	134
23:00	0	0	52	5	33	0	0	90
Total	0	2	1601	248	956	78	0	2885
Percent	0.0%	0.1%	55.5%	8.6%	33.1%	2.7%	0.0%	0.0%
AM Peak		01:00	11:00	09:00	11:00	07:00		11:00
Vol.		1	78	21	54	9		158
PM Peak			19:00	12:00	14:00	12:00		19:00
Vol.			156	17	53	6		213



154582 ATR G Class Site Code: 13220.00 Date Start: 15-Aug-15

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					1.3999 Fax: 508.545.123	34		Date Stan	: 15-Aug-15
EB				Email: dat	arequests@pdillc.com		0: 1 11 :	A (' 1 4 1	
	Start			_	_ Light	_	Single Unit	Articulated	
	Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
	08/15/15	0	0	52	3	0	2	0	57
	01:00	0	0	20	0	0	0	0	20
	02:00	0	0	13	1	0	1	0	15
	03:00	0	0	19	0	0	0	0	19
	04:00	0	0	27	1	2	1	2	33
	05:00	0	0	48	2	0	1	0	51
	06:00	0	1	50	1	0	0	0	52
	07:00	0	0	55	3	0	7	0	65
	08:00	0	0	46	2	1	1	0	50
	09:00	0	0	43	1	0	2	0	46
	10:00	0	0	46	3	0	0	1	50
	11:00	0	0	54	4	0	0	0	58
	12 PM	0	0	50	3	1	1	0	55
	13:00	0	0	69	2	0	2	0	73
	14:00	0	0	89	7	0	2	0	98
	15:00	0	0	89	3	0	3	0	95
	16:00	0	0	78	3	1	4	0	86
	17:00	0	0	95	4	0	0	0	99
	18:00	0	0	115	5	1	1	0	122
	19:00	0	0	154	9	3	0	0	166
	20:00	0	0	137	3	6	1	0	147
	21:00	0	0	108	3	5	0	0	116
	22:00	0	0	96	5	0	0	0	101
	23:00	0	0	53	4	0	0	0	57
	Total	0	1	1606	72	20	29	3	1731
	Percent	0.0%	0.1%	92.8%	4.2%	1.2%	1.7%	0.2%	0.0%
	AM Peak		06:00	07:00	11:00	04:00	07:00	04:00	07:00
	Vol.		1	55	4	2	7	2	65
	PM Peak			19:00	19:00	20:00	16:00		19:00
	Vol.			154	9	6	4		166



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Ε	В

LD			EIIIaii. Uat	arequests@pullic.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	50	2	0	1	0	53
01:00	0	0	25	0	0	0	0	25
02:00	0	0	20	0	0	0	0	20
03:00	0	0	15	0	0	2	0	17
04:00	0	0	28	1	2	4	0	35
05:00	0	0	29	0	1	1	0	31
06:00	0	1	53	4	2	1	0	61
07:00	0	0	43	4	1	1	0	49
08:00	0	0	41	5	0	0	0	46
09:00	0	1	35	6	0	1	0	43
10:00	0	0	40	3	0	1	0	44
11:00	0	0	57	2	0	1	0	60
12 PM	0	0	61	1	0	0	0	62
13:00	0	1	74	1	1	1	0	78
14:00	0	0	135	0	1	0	0	136
15:00	0	0	98	3	4	0	0	105
16:00	0	0	118	3	2	0	0	123
17:00	0	0	121	3	1	0	0	125
18:00	0	0	145	4	0	1	0	150
19:00	0	0	149	10	2	4	0	165
20:00	0	0	186	8	2	3	0	199
21:00	0	0	117	2	0	3	1	123
22:00	0	0	61	2	2	1	0	66
23:00	0	0	52	4	0	1	0	57
Total	0	3	1753	68	21	27	1	1873
Percent	0.0%	0.2%	93.6%	3.6%	1.1%	1.4%	0.1%	0.0%
AM Peak		06:00	11:00	09:00	04:00	04:00		06:00
Vol.		1	57	6	2	4		61
PM Peak		13:00	20:00	19:00	15:00	19:00	21:00	20:00
Vol.		1	186	10	4	4	1	199



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	47	4	0	1	0	52
01:00	0	0	59	4	1	2	0	66
02:00	0	0	15	0	0	0	0	15
03:00	0	0	15	1	2	1	1	20
04:00	0	0	37	4	1	5	0	47
05:00	0	0	67	12	2	2	0	83
06:00	0	1	89	11	1	2	1	105
07:00	0	0	85	12	1	2	2	102
08:00	0	1	76	12	0	2	0	91
09:00	0	0	56	11	0	3	0	70
10:00	0	0	41	5	0	1	0	47
11:00	0	0	68	11	0	2	2	83
12 PM	0	0	66	18	0	2	0	86
13:00	0	0	102	9	0	4	0	115
14:00	0	1	133	15	1	6	0	156
15:00	0	0	93	19	4	2	0	118
16:00	0	0	83	5	3	2	0	93
17:00	0	0	89	7	0	3	0	99
18:00	0	0	113	3	0	1	0	117
19:00	0	0	161	12	0	4	1	178
20:00	0	0	164	6	6	1	0	177
21:00	0	0	101	8	5	10	2	126
22:00	0	0	52	2	1	4	0	59
23:00	0	0	63	1	1	0	0	65
Total	0	3	1875	192	29	62	9	2170
Percent	0.0%	0.1%	86.4%	8.8%	1.3%	2.9%	0.4%	0.0%
AM Peak		06:00	06:00	05:00	03:00	04:00	07:00	06:00
Vol.		1	89	12	2	5	2	105
PM Peak		14:00	20:00	15:00	20:00	21:00	21:00	19:00
Vol.		1	164	19	6	10	2	178



154582 ATR G Class Site Code: 13220.00 Date Start: 15-Aug-15

B

EB			Email: dat	arequests@pdillc.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	64	9	0	1	0	74
01:00	0	0	29	2	0	2	0	33
02:00	0	0	28	4	0	0	0	32
03:00	0	0	11	0	0	3	0	14
04:00	0	0	28	4	2	5	0	39
05:00	0	0	50	6	2	4	1	63
06:00	0	1	85	17	1	3	1	108
07:00	0	0	71	15	1	12	0	99
08:00	0	0	68	14	1	4	1	88
09:00	0	0	57	7	1	4	0	69
10:00	0	0	50	6	4	1	0	61
11:00	0	0	50	11	0	5	1	67
12 PM	0	0	76	17	0	8	1	102
13:00	0	0	91	14	0	5	0	110
14:00	0	1	112	19	2	5	0	139
15:00	0	0	109	17	6	2	0	134
16:00	0	0	97	5	1	1	0	104
17:00	0	0	134	3	3	3	0	143
18:00	0	0	133	3	3	4	0	143
19:00	0	0	169	4	3	2	0	178
20:00	0	0	161	12	4	0	0	177
21:00	0	0	88	7	3	12	1	111
22:00	0	0	95	3	1	3	0	102
23:00	0	0	73	1	0	0	0	74
Total	0	2	1929	200	38	89	6	2264
Percent	0.0%	0.1%	85.2%	8.8%	1.7%	3.9%	0.3%	0.0%
AM Peak		06:00	06:00	06:00	10:00	07:00	05:00	06:00
Vol.		1	85	17	4	12	1	108
PM Peak		14:00	19:00	14:00	15:00	21:00	12:00	19:00
Vol.		1	169	19	6	12	1	178



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Start		WB				EB				Comb	in		15-Aug-	
Time	A.M.		P.M.		A.M.		P.M.		A.M.	ed	P.M.		15 Sat	
12:00	26		20		13		13		39		33			
12:15	17		25		19		18		36		43			
12:30	21		21		9		12		30		33			
12:45	18	82	22	88	16	57	12	55	34	139	34	143		
01:00	14		23		2		9		16		32			
01:15	12		21		5		22		17		43			
01:30	9		23		10		20		19		43			
01:45	8	43	28	95	3	20	22	73	11	63	50	168		
02:00	13		34		5		30		18		64			
02:15	10		27		4		11		14		38			
02:30	7		34		4		27		11		61			
02:45	5	35	35	130	2	15	30	98	7	50	65	228		
03:00	15		38		4		28		19		66			
03:15	9		46		2		28		11		74			
03:30	6		29		1		20		7		49			
03:45	11	41	36	149	12	19	19	95	23	60	55	244		
04:00	7	71	31	170	5	10	23	33	12	00	54	2-7-7		
04:00	12		37		3		19		15		56			
04:13	11		33		8		22		19		55			
04:30	12	42	33	134	17	33	22	86	29	75	55 55	220		
05:00	11	74	37	104	12	55	26	00	23	75	63	220		
05:00	14		32		11		30		25 25		62			
05:30	17		36		17		24		34		60			
05:45	10	52	28	133	11	51	19	99	21	103	47	232		
06:00		32		133		51		99		103	59	232		
06:00	16		31		13		28		29					
06:15	18		35		8		42		26		77 50			
06:30	16	00	29	400	13		29	400	29	440	58	0.45		
06:45	16	66	28	123	18	52	23	122	34	118	51	245		
07:00	18		48		12		28		30		76			
07:15	20		37		21		47		41		84			
07:30	19		38		23		44		42		82			
07:45	16	73	39	162	9	65	47	166	25	138	86	328		
08:00	19		40		16		43		35		83			
08:15	12		33		10		33		22		66			
08:30	20		44		11		27		31		71			
08:45	22	73	40	157	13	50	44	147	35	123	84	304		
09:00	15		35		8		44		23		79			
09:15	19		36		6		24		25		60			
09:30	15		44		14		25		29		69			
09:45	19	68	25	140	18	46	23	116	37	114	48	256		
10:00	22		28		11		24		33		52			
10:15	18		26		7		37		25		63			
10:30	20		35		16		19		36		54			
10:45	27	87	23	112	16	50	21	101	43	137	44	213		
11:00	25		22		14		16		39		38			
11:15	27		19		11		15		38		34			
11:30	18		21		21		12		39		33			
11:45	20	90	21	83	12	58	14	57	32	148	35	140		
Total	752		1506		516		1215		1268		2721			
Percent	59.3%		55.3%		40.7%		44.7%							
Day Total		225	58			173	1			398	9			
	10.20	_	07:00	_	06:45	_	07:15	_	10:45	_	07:15	_	_	
Peak	10:30													
Peak Vol.	10:30 99	_	162	-	74	-	181	-	159	-	335	_	-	



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Time AM PAM AM PAM AM PAM AM PAM AM SAM PAM SAM 12:05 24 18 14 19 38 34 3 12:05 24 18 14 53 23 34 4 38 12:39 22 27 7 7 13 29 40 40 12:45 16 85 20 96 14 53 23 62 30 138 43 158 158 10:100 17 16 6 6 18 23 20 48 10:115 14 25 6 6 23 20 78 27 89 46 173 10:15 14 25 6 8 8 3 17 19 45 10:145 17 64 26 95 10 25 20 78 27 89 46 173 10:20 20 8 26 8 8 30 16 56 20 8 8 55 10 20:20 8 8 26 8 8 30 16 56 20 8 8 55 10 20:33 24 8 155 10:145 17 64 26 95 10 25 20 78 27 89 46 173 10:20 20:30 15 7 26 11 29 8 8 55 10 20:33 24 8 15 10 20:33 24 15 15 10 20:33 24 15 15 10 20:33 24 15 15 10 20:33 24 15 15 15 15 15 15 15 15 15 15 15 15 15	Start		WB				EB				Comb	in		16-Aug-	
12:00 24		A.M.				A.M.				A.M.	ed	P.M.		15 Sun	
12:16 23 31 18 7 41 38 12:30 22 27 7 7 13 29 40 158 158 158 161 162 85 20 96 14 53 23 62 30 138 43 158 168 161:00 17 16 6 6 18 23 20 48 173 175 175 175 175 175 175 175 175 175 175		24		18		14		19		38					
12:30															
12:45	12:30														
011:00 17	12:45	16	85		96		53	23	62		138		158		
01:15										23					
01:45								23							
01:45 17 64 26 95 10 25 20 78 27 89 46 173 02:00 8 26 8 3 30 16 56 02:15 7 26 1 28 30 30 21 02:30 5 25 4 26 9 51 02:46 10 30 32 109 7 20 51 136 17 50 83 245 03:30 10 30 32 109 7 20 51 136 17 50 83 245 03:30 10 29 5 32 155 61 03:45 9 36 29 125 3 17 21 105 12 53 50 230 04:45 9 36 29 125 3 17 21 105 12 53 50 230 04:15 9 31 111 34 20 65 30 21 65 61 05:30 13 35 35 30 21 65 61 05:30 13 37 5 6 6 29 13 10 66 06:00 8 35 13 30 21 66 6 05:51 18 40 133 30 21 66 6 05:51 18 40 133 30 21 66 61 05:55 18 40 153 7 31 41 125 22 85 81 278 06:50 15 18 40 153 7 31 41 125 22 85 81 278 06:50 15 16 51 13 3 34 29 85 61 06:50 15 16 51 13 3 34 30 30 98 85 61 06:50 15 16 51 14 13 3 34 14 14 125 29 85 61 06:50 15 16 51 14 14 14 14 14 14 14 14 14 14 14 14 14															
02.00 8 26 8 26 8 30 16 55 7 26 1 29 8 55 7 20 20 10 20 20 5 25 14 26 9 9 51 20 20 20 10 30 32 109 7 20 51 136 117 50 83 245 30 30 10 30 32 109 7 20 51 136 117 50 83 245 30 30 30 10 30 15 7 37 6 29 13 66 30 30 10 29 55 32 17 21 105 112 53 50 230 40 40 7 38 22 27 9 9 65 40 40 40 7 38 28 28 132 9 35 32 123 17 6 6 20 40 40 30 8 35 31 11 11 34 20 66 30 30 13 37 5 5 24 18 8 61 50 50 50 50 50 50 50 50 50 50 50 50 50			64		95		25	20	78		80		173		
02:15	01.40		04		33		20		70	16	03		175		
02:30	02.00							30							
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	P.H.F.	0.906		0.868		0.763		0.886		0.872		0.898			



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P.H.F.	0.929		0.945		0.875		0.880		0.946		0.926			



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05:00 27 39 11 23 38 62 05:15 16 33 24 37 40 70 05:30 22 51 15 38 37 89 05:45 21 86 29 152 13 63 45 143 34 149 74 295 06:00 31 39 27 39 58 78 70 70 66:15 29 38 25 32 54 70 66:30 19 50 35 39 54 89 66:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 64 113 64 83 64 113 67:45 30 38 64 113 64 113 60 236 87 391 88			050		60	21	404	28		12	4=0		40		04:30
05:15 16 33 24 37 40 70 05:30 22 51 15 38 37 89 05:45 21 86 29 152 13 63 45 143 34 149 74 295 06:00 31 39 27 39 58 78 78 06:15 29 38 25 32 54 70 06:30 19 50 35 39 54 89 06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 316 07:15 34 75 30 38 64 113 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 </td <td></td> <td></td> <td>256</td> <td></td> <td>82</td> <td>23</td> <td>104</td> <td>18</td> <td>39</td> <td></td> <td>152</td> <td></td> <td>43</td> <td></td> <td>04:45</td>			256		82	23	104	18	39		152		43		04:45
05:30 22 51 15 38 37 89 05:45 21 86 29 152 13 63 45 143 34 149 74 295 06:00 31 39 27 39 58 78 06:15 29 38 25 32 54 70 06:30 19 50 35 39 54 89 06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>38</td> <td></td> <td>23</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>05:00</td>						38		23							05:00
05:45 21 86 29 152 13 63 45 143 34 149 74 295 06:00 31 39 27 39 58 78 70 06:15 29 38 25 32 54 70 89 06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:35 41 13 108 64 113 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08 08 09 236 87 391 08 08 09 08 178 60 236 87 391 08 08 08 08 08															05:15
06:00 31 39 27 39 58 78 06:15 29 38 25 32 54 70 06:30 19 50 35 39 54 89 06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 101 08:15 38 38 24 47 62 85 08:30 31 46 179 22 88 34 177 41								38		15					05:30
06:15 29 38 25 32 54 70 06:30 19 50 35 39 54 89 06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101			295		149		143	45	63		152	29	86		05:45
06:30 19 50 35 39 54 89 06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 101 101 101 101 102 103<						58		39		27		39			06:00
06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 <t< td=""><td></td><td></td><td></td><td>70</td><td></td><td>54</td><td></td><td>32</td><td></td><td>25</td><td></td><td>38</td><td></td><td>29</td><td>06:15</td></t<>				70		54		32		25		38		29	06:15
06:45 26 105 46 173 21 108 33 143 47 213 79 316 07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 <t< td=""><td></td><td></td><td></td><td>89</td><td></td><td>54</td><td></td><td>39</td><td></td><td>35</td><td></td><td>50</td><td></td><td>19</td><td>06:30</td></t<>				89		54		39		35		50		19	06:30
07:00 32 52 32 31 64 83 07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101			316		213	47	143	33	108		173	46	105	26	
07:15 34 75 30 38 64 113 07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 <td></td> <td>52</td> <td></td> <td></td> <td></td>												52			
07:30 41 54 7 54 48 108 07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 08:15 38 38 24 47 62 85 08:30 31 46 18 44 49 90 08:45 19 111 46 179 22 88 34 177 41 199 80 356 09:00 28 35 12 37 40 72 99:15 32 30 19 34 51 64 64 69:30 34 51 64 64 69:30 39 50 99:45 28 122 29 127 19 69 23 111 47 191 52 238 10:00 30 47 <															07:15
07:45 30 137 32 213 30 99 55 178 60 236 87 391 08:00 23 49 24 52 47 101 391 08:15 38 38 24 47 62 85 08:30 31 46 18 44 49 90 08:45 19 111 46 179 22 88 34 177 41 199 80 356 09:00 28 35 12 37 40 72 20 20 93 34 51 64 40 93 356 40 72 20 15 32 30 19 34 51 64 40 33 19 17 53 50 50 50 50 47 59 47 59 10:15 38 38 15 34 53 72 53															07:30
08:00 23 49 24 52 47 101 08:15 38 38 24 47 62 85 08:30 31 46 18 44 49 90 08:45 19 111 46 179 22 88 34 177 41 199 80 356 09:00 28 35 12 37 40 72			301		236		178		aa		213		137		07:45
08:15 38 38 24 47 62 85 08:30 31 46 18 44 49 90 08:45 19 111 46 179 22 88 34 177 41 199 80 356 09:00 28 35 12 37 40 72 <			001		200		170	52	33		210		107		07.40
08:30 31 46 18 44 49 90 08:45 19 111 46 179 22 88 34 177 41 199 80 356 09:00 28 35 12 37 40 72 60 72 72 72 72 72 72 72 72 72 72 73 72 7															
08:45 19 111 46 179 22 88 34 177 41 199 80 356 09:00 28 35 12 37 40 72 72 09:15 32 30 19 34 51 64 09:30 34 33 19 17 53 50 09:45 28 122 29 127 19 69 23 111 47 191 52 238 10:00 30 29 17 30 47 59 59 51 50														30 24	00.10
09:00 28 35 12 37 40 72 09:15 32 30 19 34 51 64 09:30 34 33 19 17 53 50 09:45 28 122 29 127 19 69 23 111 47 191 52 238 10:00 30 29 17 30 47 59 59 10:15 38 38 15 34 53 72 63 10:15 25 47 63 63 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36			050		400		477		00	18	470		444		08:30
09:15 32 30 19 34 51 64 09:30 34 33 19 17 53 50 09:45 28 122 29 127 19 69 23 111 47 191 52 238 10:00 30 29 17 30 47 59 10:15 38 38 15 34 53 72 10:30 32 38 15 25 47 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36			356		199		1//	34	88		179		111		08:45
09:30 34 33 19 17 53 50 09:45 28 122 29 127 19 69 23 111 47 191 52 238 10:00 30 29 17 30 47 59 10:15 38 38 15 34 53 72 10:30 32 38 15 25 47 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36															09:00
09:45 28 122 29 127 19 69 23 111 47 191 52 238 10:00 30 29 17 30 47 59 10:15 38 38 15 34 53 72 10:30 32 38 15 25 47 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36								34				30			09:15
10:00 30 29 17 30 47 59 10:15 38 38 15 34 53 72 10:30 32 38 15 25 47 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36				50											09:30
10:15 38 38 15 34 53 72 10:30 32 38 15 25 47 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36			238		191		111	23	69		127		122	28	09:45
10:30 32 38 15 25 47 63 10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36															10:00
10:45 26 126 29 134 14 61 13 102 40 187 42 236 11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36								34						38	10:15
11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36															10:30
11:00 44 24 14 25 58 49 11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36			236		187		102		61	14	134	29	126		
11:15 34 21 24 11 58 32 11:30 39 16 16 20 55 36										14				44	
11:30 39 16 16 20 55 36															
				36								16			
- 11.70 T1 100 C0 00 10 10 10 19 09 7/0 47 104			164	47	225	54	74	18	67	13	90	29	158	41	11:45
Total 1068 1817 747 1517 1815 3334							- ' '								
Percent 58.8% 54.5% 41.2% 45.5%				0004		1010									
Pay Total 2885 2264 5149				9	514			64	226			35	288		ay Total
Peak 11:00 - 06:45 - 06:30 - 07:30 - 07:00 - 07:15		_	_	07:15	_	07:00	_	07:30	_	06:30	_	06:45	_	11:00	Peak
Vol. 158 - 227 - 118 - 208 - 236 - 409		_	-		_		_		_		_		_		
P.H.F. 0.898 0.757 0.843 0.945 0.922 0.905															



154582 ATR H Class Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

WB			Email: dat	arequests@pdillc.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	1	20	3	41	0	0	65
01:00	0	0	11	2	29	4	0	46
02:00	0	0	10	2	27	0	0	39
03:00	0	0	18	0	28	1	0	47
04:00	0	0	15	2	34	3	0	54
05:00	0	0	26	3	47	2	0	78
06:00	0	0	32	4	49	2	0	87
07:00	0	0	21	5	52	1	0	79
08:00	0	0	22	7	48	0	0	77
09:00	0	0	22	4	52	2	0	80
10:00	0	0	28	2	45	6	0	81
11:00	0	0	25	1	55	1	0	82
12 PM	0	0	33	4	58	2	0	97
13:00	0	0	30	5	63	1	0	99
14:00	0	0	45	1	64	0	0	110
15:00	0	0	35	4	61	1	0	101
16:00	0	0	31	7	60	1	0	99
17:00	0	0	27	8	72	2	1	110
18:00	0	0	33	4	71	3	0	111
19:00	0	0	30	3	61	1	0	95
20:00	0	0	40	0	63	4	0	107
21:00	0	0	39	0	67	1	0	107
22:00	0	0	22	3	50	0	0	75
23:00	0	0	15	3	54	1	0	73
Total	0	1	630	77	1251	39	1	1999
Percent	0.0%	0.1%	31.5%	3.9%	62.6%	2.0%	0.1%	0.0%
AM Peak		00:00	06:00	08:00	11:00	10:00		06:00
Vol.		1	32	7	55	6		87
PM Peak	,		14:00	17:00	17:00	20:00	17:00	18:00
Vol.			45	8	72	4	1	111



D A T A 154582 ATR H Class INDUSTRIES, LLC Site Code: 13220.00

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Email: datarequests@pdillc.com

WB

***			Liliali. dat	arequestse punic.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	14	2	35	1	0	52
01:00	0	0	18	2	29	1	0	50
02:00	0	0	9	1	27	0	0	37
03:00	0	0	15	1	30	2	0	48
04:00	0	0	25	0	34	0	0	59
05:00	0	0	22	0	44	0	0	66
06:00	0	0	26	3	42	1	0	72
07:00	0	0	20	2	53	0	0	75
08:00	0	0	28	2	50	2	0	82
09:00	0	0	28	1	50	0	0	79
10:00	0	0	26	2	58	0	0	86
11:00	0	0	23	5	61	1	0	90
12 PM	0	0	23	4	65	1	0	93
13:00	0	0	31	3	68	2	0	104
14:00	0	0	28	0	62	3	0	93
15:00	0	0	55	6	64	0	0	125
16:00	0	0	36	4	68	1	0	109
17:00	0	0	42	7	67	1	1	118
18:00	0	0	39	6	60	2	0	107
19:00	0	0	36	0	63	0	0	99
20:00	0	0	37	3	50	4	0	94
21:00	0	0	32	2	55	5	0	94
22:00	0	0	25	2	49	1	0	77
23:00	0	0	18	1	47	1	0	67
Total	0	0	656	59	1231	29	1	1976
Percent	0.0%	0.0%	33.2%	3.0%	62.3%	1.5%	0.1%	0.0%
AM Peak			08:00	11:00	11:00	03:00		11:00
Vol.			28	5	61	2		90
PM Peak			15:00	17:00	13:00	21:00	17:00	15:00
Vol.			55	7	68	5	1	125



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	1	23	1	27	1	0	53
01:00	0	0	16	3	28	3	0	50
02:00	0	0	4	1	21	3	0	29
03:00	0	0	16	3	29	3	0	51
04:00	0	0	28	4	34	0	0	66
05:00	0	0	44	10	44	1	0	99
06:00	0	0	40	18	52	6	0	116
07:00	0	0	40	21	55	5	0	121
08:00	0	0	33	9	64	1	0	107
09:00	0	0	36	14	59	5	0	114
10:00	0	0	45	14	57	7	0	123
11:00	0	0	44	16	63	0	0	123
12 PM	0	1	34	15	53	5	0	108
13:00	0	0	49	15	61	2	0	127
14:00	0	0	58	14	61	2	0	135
15:00	0	1	52	4	62	1	2	122
16:00	0	0	50	6	62	3	0	121
17:00	0	0	59	8	57	2	0	126
18:00	0	0	49	12	70	1	0	132
19:00	0	0	30	3	64	2	0	99
20:00	0	1	35	5	55	3	0	99
21:00	0	0	37	7	56	4	0	104
22:00	0	0	33	4	49	3	0	89
23:00	0	0	20	4	50	1	0	75
Total	0	4	875	211	1233	64	2	2389
Percent	0.0%	0.2%	36.6%	8.8%	51.6%	2.7%	0.1%	0.0%
AM Peak		00:00	10:00	07:00	08:00	10:00		10:00
Vol.		1	45	21	64	7		123
PM Peak		12:00	17:00	12:00	18:00	12:00	15:00	14:00
Vol.		1	59	15	70	5	2	135



154582 ATR H Class Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
WB Email: datarequests@pdillc.com

VVD			EIIIdii. Udl	arequests@pullic.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	27	6	33	3	0	69
01:00	0	1	7	7	27	4	0	46
02:00	0	0	13	3	27	0	0	43
03:00	0	0	14	6	31	1	0	52
04:00	0	0	24	7	31	3	0	65
05:00	0	1	29	3	49	4	1	87
06:00	0	0	40	25	52	3	0	120
07:00	0	0	55	20	59	4	0	138
08:00	0	0	38	14	50	6	0	108
09:00	0	0	35	14	63	7	0	119
10:00	0	0	38	18	54	4	0	114
11:00	0	0	56	18	66	3	0	143
12 PM	0	0	55	15	61	4	0	135
13:00	0	0	54	20	64	3	0	141
14:00	0	0	64	15	67	2	0	148
15:00	0	0	54	2	64	0	0	120
16:00	0	0	61	9	65	2	0	137
17:00	0	0	61	4	68	1	1	135
18:00	0	0	50	10	69	4	0	133
19:00	0	0	55	9	52	2	0	118
20:00	0	0	38	7	56	0	0	101
21:00	0	0	32	0	48	9	0	89
22:00	0	0	32	7	53	1	0	93
23:00	0	0	25	3	43	3	0	74
Total	0	2	957	242	1252	73	2	2528
Percent	0.0%	0.1%	37.9%	9.6%	49.5%	2.9%	0.1%	0.0%
AM Peak		01:00	11:00	06:00	11:00	09:00	05:00	11:00
Vol.		1	56	25	66	7	1	143
PM Peak			14:00	13:00	18:00	21:00	17:00	14:00
Vol.			64	20	69	9	1	148



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Start		WB											Sat	
Time	A.M.	WB	P.M.										15-Aug- 15	
12:00	21		23										15	
12.00	15		28											
12:15	15		28											
12:30	15		25	~=										
12:45	14	65	21	97										
01:00	11		29											
01:15	14		24											
01:30	12		25											
01:45	9	46	21	99										
02:00	11		30											
02:00	6		21											
02:15 02:30	14		26											
02.30	14	00	20	440										
02:45	8	39	33	110										
03:00	12		24											
03:15 03:30	10		30											
03:30	10		25											
03:45	15	47	22	101										
04:00	13		27											
04:15	15		25											
04:15 04:30	13		24											
04.30	10	E 4	24	99										
04:45	13	54	23	99										
05:00	18		28											
05:15	17		26											
05:30	22		28											
05:45	21	78	28	110										
06:00	18		21											
06:15	28		31											
06:30	20		28											
06:45	21	87	31	111										
06.45	21	07		1111										
07:00	25		30											
07:15	19		21											
07:30	17		25											
07:45	18	79	19	95										
08:00	19		32											
08:15	16		29											
08:30	22		21											
08:45	20	77	25	107										
00.43	20	, ,	20	107										
09:00	22		29											
09:15	24		27											
09:30	17		30											
09:45	17	80	21	107										
10:00	20		19											
10:15	17		18											
10:30	22		20											
10:45	22	81	18	75										
11:00	22	01	18	7.5										
11.00	22 24		10											
11:15			18											
11:30	15		18											
11:45	21	82	19	73										
Total	815		1184											
Percent		•	100.0%		0.0%		0.0%							
Day Total		1999	9											
Peak	06:15	-	06:15	-	-	-	-	-	-	-	-	-	-	
Vol.	94 0.839	-	120 0.909	-	-	-	-	-	-	-	-	-	-	
P.H.F.														



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Start		WB											Sun	
Time	A.M.		P.M.										16-Aug- 15	
12:00	13		22											
12:15	14		24											
12:30	14	50	24	00										
12:45	11	52	23	93										
01:00 01:15	13		22 27											
01:15	9 12		21											
01:30	12	50	25	104										
02:00	16 10	50	30 22	104										
02:00	0		23											
02:13	9 9		26 26											
02:45	9	37	22	93										
03:00	12	37	38	33										
03:15	10		31											
03:30	12		28											
03:45	14	48	28	125										
04:00	11	40	22	125										
04:00	14		31											
04:30	19		30											
04:45	15	59	26	109										
05:00	17	00	33	100										
05:15	18		33											
05:30	11		24											
05:45	20	66	28	118										
06:00	21		27											
06:15	15		26											
06:30	12		25											
06:45	24	72	29	107										
07:00	20		28											
07:15	17		24											
07:30	20		20											
07:45	18	75	27	99										
08:00	22		26											
08:15	17		23											
08:30	20		28											
08:45	23	82	17	94										
09:00	17		23											
09:15	18		26											
09:30	24		20											
09:45	20	79	25	94										
10:00	22		16											
10:15	21		25											
10:30	22		17											
10:45	21	86	19	77										
11:00	27		19											
11:15	24		21											
11:30	22		17											
11:45	17	90	10	67										
Total	796		1180											
Percent		10	00.0%		0.0%		0.0%							
Day Total		1976												
Peak	10:30	_	03:00	_	_	_	_	_	_	_	_	_	-	
	. 0.00		125											
Vol.	94	-	120	-	-	-	-	-	-	-	-	-	-	



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Start		WB											Mon	
Time	A.M.		P.M.										17-Aug- 15	
12:00	8		30										15	
12:15	18		23											
12:30	15		24											
12:45	12	53	31	108										
01:00	9	00	27	100										
01:15	11		28											
01:13	13		35											
01.30	13	50	33 27	107										
01:45	17	50	37	127										
02:00	6		30											
02:15	11		30											
02:30	6		45											
02:45	6	29	30	135										
03:00	10		38											
03:15	12		26											
03:30	15		28											
03:45	14	51	30	122										
04:00	14	0.	29											
04:15	18		26											
04:30	21		29											
04:45	13	66	37	121										
04.43	10	66		121										
05:00	26		34											
05:15	17		30											
05:30	32		29											
05:45	24	99	33	126										
06:00	37		33											
06:15	25		35											
06:30	29		28											
06:45	25	116	36	132										
07:00	24		26											
07:15	34		25											
07:30	31		26											
07:45	32	121	22	99										
08:00	32	121	22	33										
08:00	24		25											
00.10	24		23											
08:30	27	407	24	00										
08:45	24	107	28	99										
09:00	36		24											
09:15	19		26											
09:30	33		30											
09:45	26	114	24	104										
10:00	38		22											
10:15	29		20											
10:30	25		24											
10:45	31	123	23	89										
11:00	33		18											
11:15	33		20											
11:30	33		16											
11:45	24	123	21	75										
Total	1052		1337											
Percent		1	100.0%		0.0%		0.0%							
					,0		/-							
Day Total		2389	9											
Peak	10:45	_	02:15	_	-	_	_	_	_	_	-	_	-	
			-											
Vol.	130	-	143	-	-	-	-	-	-	-	-	-	-	



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Start		WB											Tue	
Time	A.M.		P.M.										18-Aug- 15	
12:00	25		29											
12:15	14		40											
12:30	17		34											
12:45	13	69	32	135										
01:00	10		41											
01:15	10		30											
01:30	15	40	33	444										
01:45	11	46	37	141										
02:00	8		36											
02:15	12		42											
02:30	13		36											
02:45	10	43	34	148										
03:00	13		27											
03:15	15		30											
03:30	11		29											
03:45	13	52	34	120										
04:00	15		38											
04:15	19		36											
04:30	14	0.5	30	407										
04:45	17	65	33	137										
05:00	20		41											
05:15	16		33											
05:30	23	0.7	32	405										
05:45	28	87	29	135										
06:00	37		28											
06:15	30		39											
06:30	24	120	31	400										
06:45	29 27	120	35	133										
07:00 07:15	26		23 31											
07:13	36 39		34											
07:30	39	120	34	118										
08:00	36 17	138	30 33	110										
08:15	35		24											
08:30	30		23											
08:45	26	108	23 21	101										
09:00	30	100	18	101										
09:00	32		28											
09:30	29		24											
09:45	28	119	19	89										
10:00	29	119	14	09										
10:15	35		23											
10:30	31		26											
10:45	19	114	30	93										
11:00	36		16	30										
11:15	32		19											
11:30	39		17											
11:45	36	143	22	74										
Total	1104	140	1424											
Percent		10	00.0%		0.0%		0.0%							
Day Total		2528												
Peak	11:00	_	01:45	_	_	_	_	_	_	_	_	_	_	_
. cun	1.00		151											
Vol.	143	-	101	-	-	-	-	-	-	-	-	-	-	



154582 ATR I CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

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NB				1.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Start	. 13-Aug-13
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	30	3	11	1	0	45
01:00	0	0	14	0	8	0	0	22
02:00	0	0	8	0	15	0	0	23
03:00	0	0	11	1	16	2	0	30
04:00	0	0	33	0	14	1	0	48
05:00	0	0	77	3	24	1	0	105
06:00	0	0	115	2	27	1	0	145
07:00	0	0	63	1	25	1	0	90
08:00	0	0	42	1	24	2	0	69
09:00	0	0	44	1	31	2	0	78
10:00	0	0	61	0	33	0	0	94
11:00	0	0	103	0	33	0	0	136
12 PM	0	0	112	2	46	2	0	162
13:00	0	0	126	2	42	0	0	170
14:00	0	0	229	7	37	0	0	273
15:00	0	0	176	4	39	0	0	219
16:00	0	0	165	7	39	1	0	212
17:00	0	0	230	3	38	1	0	272
18:00	0	0	330	15	44	0	0	389
19:00	0	0	391	10	31	1	0	433
20:00	0	0	280	0	33	0	0	313
21:00	0	0	115	1	25	0	0	141
22:00	0	0	69	1	19	0	0	89
23:00	0	0	59	3	18	1	0	81
Total	0	0	2883	67	672	17	0	3639
Percent	0.0%	0.0%	79.2%	1.8%	18.5%	0.5%	0.0%	0.0%
AM Peak			06:00	00:00	10:00	03:00		06:00
Vol.			115	3	33	2		145
PM Peak			19:00	18:00	12:00	12:00		19:00
Vol.			391	15	46	2		433



154582 ATR I CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@odillc.com

NB					1.3999 Fax: 508.545.123	34		Date Stan	: 15-Aug-15
	Start			Email: dat	arequests@pdillc.com		Single Unit	Articulated	
	Time	Dioviolog	Motorovoloo	Cars	Light	Buses	Single Onit		Total
		Bicylcles	Motorcycles		Trucks		Heavy	Trucks	Total
	08/16/15	0	0	36	1	8	0	0	45
	01:00	0	0	12	0	8	0	0	20
	02:00	0	0	7	1	10	0	0	18
	03:00	0	0	14	1	18	1	0	34
	04:00	0	0	35	0	17	2	0	54
	05:00	0	0	56	1	18	0	0	75
	06:00	0	0	117	4	16	0	0	137
	07:00	0	0	79	1	26	0	0	106
	08:00	0	0	48	2	24	2	0	76
	09:00	0	1	38	2	26	1	0	68
	10:00	0	0	72	0	27	1	0	100
	11:00	0	0	98	0	36	0	0	134
	12 PM	0	0	109	1	37	0	0	147
	13:00	0	0	112	0	46	1	0	159
	14:00	0	0	240	5	42	1	0	288
	15:00	0	0	233	7	39	2	0	281
	16:00	0	0	247	4	44	1	0	296
	17:00	0	0	301	9	46	3	0	359
	18:00	0	0	384	3	49	1	0	437
	19:00	0	0	382	4	38	0	0	424
	20:00	0	0	259	10	33	1	0	303
	21:00	0	0	125	2	21	0	0	148
	22:00	0	0	33	1	14	0	0	48
	23:00	0	0	16	1	18	1	0	36
	Total	0	1	3053	60	661	18	0	3793
	Percent	0.0%	0.0%	80.5%	1.6%	17.4%	0.5%	0.0%	0.0%
	AM Peak		09:00	06:00	06:00	11:00	04:00		06:00
	Vol.		1	117	4	36	2		137
	PM Peak			18:00	20:00	18:00	17:00		18:00
	Vol.			384	10	49	3		437



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Start			Lillall. dat	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/24/15	0	0	8	2	9	1	0	20
01:00	0	0	1	3	7	0	0	11
02:00	0	0	0	0	9	0	0	9
03:00	0	0	7	1	17	1	0	26
04:00	0	0	36	0	16	2	0	54
05:00	0	0	88	2	21	1	0	112
06:00	0	0	90	4	23	1	0	118
07:00	0	0	68	2	30	0	0	100
08:00	0	0	36	5	32	3	0	76
09:00	0	0	50	3	31	4	0	88
10:00	0	0	33	2	27	0	0	62
11:00	0	0	75	5	36	6	1	123
12 PM	0	0	112	3	43	4	0	162
13:00	0	0	140	3	42	1	0	186
14:00	0	0	207	6	36	6	0	255
15:00	0	0	224	7	46	0	0	277
16:00	0	0	212	8	43	2	0	265
17:00	0	0	257	10	44	0	0	311
18:00	0	0	316	4	47	1	0	368
19:00	0	0	360	12	38	3	0	413
20:00	0	0	239	3	37	1	0	280
21:00	0	0	114	3	30	0	0	147
22:00	0	0	86	3	18	0	0	107
23:00	0	0	63	2	11	0	0	76
Total	0	0	2822	93	693	37	1	3646
Percent	0.0%	0.0%	77.4%	2.6%	19.0%	1.0%	0.0%	0.0%
AM Peak			06:00	08:00	11:00	11:00	11:00	11:00
Vol.			90	5	36	6	1	123
PM Peak			19:00	19:00	18:00	14:00		19:00
Vol.			360	12	47	6		413



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Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/25/15	0	0	18	4	9	3	0	34
01:00	0	0	8	1	6	1	0	16
02:00	0	0	4	1	10	0	0	15
03:00	0	0	9	0	17	1	0	27
04:00	0	0	34	3	15	4	0	56
05:00	0	0	66	6	28	2	1	103
06:00	0	0	79	7	30	4	1	121
07:00	0	0	60	5	32	3	0	100
08:00	0	0	21	0	27	6	0	54
09:00	0	0	41	4	37	4	0	86
10:00	0	0	55	4	33	3	0	95
11:00	0	0	68	9	38	3	1	119
12 PM	0	0	102	4	37	1	0	144
13:00	0	0	140	4	40	3	0	187
14:00	0	0	190	9	47	0	0	246
15:00	0	0	162	3	39	2	0	206
16:00	0	0	244	5	43	0	0	292
17:00	0	0	264	10	37	0	0	311
18:00	0	0	385	8	45	2	0	440
19:00	0	0	366	6	42	0	0	414
20:00	0	0	232	5	24	1	0	262
21:00	0	0	124	5	29	1	0	159
22:00	0	0	84	2	19	0	0	105
23:00	0	0	58	1	12	0	0	71
Total	0	0	2814	106	696	44	3	3663
Percent	0.0%	0.0%	76.8%	2.9%	19.0%	1.2%	0.1%	0.0%
AM Peak			06:00	11:00	11:00	08:00	05:00	06:00
Vol.			79	9	38	6	1	121
PM Peak			18:00	17:00	14:00	13:00		18:00
Vol.			385	10	47	3		440



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Start		NB		-									Sat	
Time	A.M.		P.M.										15-Aug- 15	
12:00	11		37											
12:15	12		31											
12:30	10		46											
12:45	12	45	48	162										
01:00	11		35											
01:15	2		32											
01:30	5		46											
01:45	4	22	57	170										
02:00	5		64											
02:15	6		64											
02:30	6		78	070										
02:45	6	23	67	273										
03:00	5		53											
03:15	6		59											
03:30	9		55	040										
03:45	10	30	52	219										
04:00	7		54											
04:15	8		60											
04:30	10	40	46	040										
04:45	23	48	52	212										
05:00	17		53											
05:15	20		78 57											
05:30	29	405	57	070										
05:45	39	105	84	272										
06:00	37		96											
06:15	42		82											
06:30	37	4.45	96	000										
06:45	29	145	115	389										
07:00	26		106											
07:15	24		119											
07:30	28	00	114	400										
07:45	12	90	94	433										
08:00	16		89											
08:15	17		83											
08:30	18	60	72	242										
08:45	18 21	69	69 47	313										
09:00 09:15	15		37											
09:15	18		35											
09.30	24	78	22	141										
10:00	15	70	25 25	141										
10:00	23		21											
10:30	27		20											
10:45	29	94	23	89										
11:00	31	0-1	32	00										
11:15	31		11											
11:30	39		15											
11:45	35	136	23	81										
Total	885	100	2754	<u> </u>										
Percent	000	10	00.0%		0.0%		0.0%							
Day Total		3639												
Peak	05:45	_	06:45	_	_	_	-	_	_	_	_	_	_	_
Vol.	155	-	454	-	-	_	-	-	-	-	-	-	-	-
P.H.F.	0.923		0.954											



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Start		NB											Sun	
Time	A.M.		P.M.										16-Aug- 15	
12:00	19		44										10	
12:15	13		26											
12:30	10		44											
12:45	3	45	33	147										
01:00	5		34											
01:15	6		36											
01:30	3		46											
01:45	6	20	43	159										
02:00	3	20	49	139										
02:00	3		49 67											
02.13	4		07											
02:30	6	40	81	000										
02:45	5	18	91	288										
03:00	6		69											
03:15	6		72											
03:30	7		77											
03:45	15	34	63	281										
04:00	11		68											
04:15	13		70											
04:30	9		74											
04:45	21	54	84	296										
05:00	16		92											
05:15	16		73											
05:30	20		95											
05:45	23	75	99	359										
06:00	30		108											
06:15	40		104											
06:30	40		104											
06:45	27	137	121	437										
07:00	27	107	100	401										
07:15	24		120											
07:13	38		96											
07:30	17	106	100	424										
07.43	20	100	108	424										
08:00	20		80											
08:15	19		91											
08:30	22		77	000										
08:45	15	76	55	303										
09:00	14		50											
09:15	17		35											
09:30	18		35											
09:45	19	68	28	148										
10:00	15		15											
10:15	26		10											
10:30	29		11											
10:45	30	100	12	48										
11:00	28		13											
11:15	34		11											
11:30	37		5											
11:45	35	134	7	36										
Total	867		2926					·						
Percent			100.0%		0.0%		0.0%							
Day Total		379	3											
Peak	06:00	-	06:30	-	-	-	-	-	-	-	-	-	-	
Vol.	137	-	445	-	-	-	-	-	-	-	-	-	-	
P.H.F.	0.856		0.919											



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Start		NB											Mon	
ime	A.M.		P.M.										24-Aug- 15	
12:00	7		37											
12:15	6		37											
12:30	3		44											
12:45	4	20	44	162										
01:00	4		34											
01:15	3		49											
01:30	2		48											
01:45	2	11	55	186										
02:00	2		57											
02:15	1		59											
02:30	3		71											
02:45	3	9	68	255										
03:00	5	0	68	200										
03:15	5		75											
03:30	7		66											
03:45	9	26	68	277										
03:45	9 7	20	55	211										
04:00 04:15	7 14		55 70											
04:15	14		70											
04:30	10	- 4	65 75	005										
04:45	23	54	75 25	265										
05:00	22		85											
05:15	24		76											
05:30	28		76											
05:45	38	112	74	311										
06:00	43		80											
06:15	30		76											
06:30	20		95											
06:45	25	118	117	368										
07:00	24		101											
07:15	24		119											
07:30	32		106											
07:45	20	100	87	413										
08:00	21	100	80	110										
08:15	15		85											
08:30	21		67											
08:45	19	76	48	280										
09:00	17	70	49	200										
09.00	17													
09:15	18		41											
09:30	28	00	25	4 47										
09:45	25	88	32	147										
10:00	12		32											
10:15	14		25											
10:30	17		22	4.5-										
10:45	19	62	28	107										
11:00	33		24											
11:15	27		17											
11:30	36		18											
11:45	27	123	17	76										
Total	799		2847											
Percent		1	100.0%		0.0%		0.0%							
ay Total		3646	6											
Peak	05:30	_	06:45	_	_	_	_	_	_	_	_	_	_	
ı c ar	00.00	-	00.45	-	-	-	-	-	-	-	-	-	-	
Vol.	139	-	443	-	_	-	_	-	-	_	-	-	-	



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Start		NB											Tue	
Time	A.M.		P.M.										25-Aug- 15	
12:00	11		31											
12:15	11		38											
12:30	6		43											
12:45	6	34	32	144										
01:00	5		36											
01:15	3		44											
01:30	4		47											
01:45	4	16	60	187										
02:00	6	. 0	51											
02:15	2		61											
02:15 02:30	4		69											
02:45	3	15	65	246										
03:00		13	44	240										
03.00	3													
03:15 03:30	4		48											
03:30	10	07	51	000										
03:45	10	27	63	206										
04:00	9		67											
04:15 04:30	12		74											
04:30	14		73											
04:45	21	56	78	292										
05:00	18		76											
05:15	23		70											
05:30	31		89											
05:45	31	103	76	311										
06:00	33		103											
06:15	24		111											
06:30	27		104											
06:45	37	121	122	440										
07:00	23		112											
07:15	26		117											
07:10	33		90											
07:45	18	100	95	414										
08:00	14	100	84	414										
00.00	20		0 4											
08:15	20		72											
08:30	11	5 4	65	000										
08:45	9	54	41	262										
09:00	14		38											
09:15	18		52											
09:30	26		38											
09:45	28	86	31	159										
10:00	23		31											
10:15	21		30											
10:30	23		18											
10:45	28	95	26	105										
11:00	28		28											
11:15	28		16											
11:30	30		14											
11:45	33	119	13	71										
Total	826		2837											
Percent		1	100.0%		0.0%		0.0%							
ay Total		3663	3											
	00.00		06:30											
		-	Uh::3()	-	-	-	-	-	_	-	-	-	-	
Peak Vol.	06:00 121	_	455	_	_	_	_	_	_	_	_	_	_	



154582 ATR J CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@odillc.com

MD Diabt Lane				31.3999 Fax: 508.545.123	Date Start: 15-Aug-15			
WB Right Lane Start			Email: dat	arequests@pdillc.com		Single Unit	Articulated	
Time	Dioviolog	Motorovoloo	Cars	Light Trucks	Buses	Heavy		Total
08/15/15	Bicylcles	Motorcycles		Trucks			Trucks	Total
	0	0	84	1	5	0	0	90
01:00	0	0	33	1	5	0	0	39
02:00	0	0	39	0	1	0	0	40
03:00	0	0	165	1	/	3	1	177
04:00	0	0	469	2	14	1	0	486
05:00	0	0	579	17	23	1	0	620
06:00	0	0	626	16	24	1	0	667
07:00	0	0	423	10	20	2	0	455
08:00	0	0	462	15	25	1	0	503
09:00	0	0	376	7	32	4	0	419
10:00	0	0	290	5	24	0	0	319
11:00	0	0	316	9	29	2	0	356
12 PM	0	0	278	10	31	0	0	319
13:00	0	0	280	13	31	1	0	325
14:00	0	0	404	6	21	2	0	433
15:00	0	0	362	8	24	1	1	396
16:00	0	0	384	10	23	0	0	417
17:00	0	0	349	4	23	0	0	376
18:00	0	0	254	8	21	0	0	283
19:00	0	0	223	6	10	0	0	239
20:00	0	0	188	5	11	0	0	204
21:00	0	0	155	2	12	1	0	170
22:00	0	0	125	2	4	0	0	131
23:00	0	0	91	2	5	0	0	98
Total	0	0	6955	160	425	20	2	7562
Percent	0.0%	0.0%	92.0%	2.1%	5.6%	0.3%	0.0%	0.0%
AM Peak			06:00	05:00	09:00	09:00	03:00	06:00
Vol.			626	17	32	4	1	667
PM Peak			14:00	13:00	12:00	14:00	15:00	14:00
Vol.			404	13	31	2	1	433
***			-	-		_		



154582 ATR J CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

14/5 51 1			Office: 508.48	1.3999 Fax: 508.545.123	34		Date Stan	: 15-Aug-15
WB Right Lane			Email: dat	arequests@pdillc.com		0: 1 11 :		
Start			_	_ Light	_	Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	91	1	3	0	0	95
01:00	0	0	65	1	1	0	0	67
02:00	0	0	35	0	2	0	0	37
03:00	0	0	164	2	10	0	0	176
04:00	0	0	432	13	19	0	0	464
05:00	0	0	597	13	23	0	0	633
06:00	0	0	577	15	18	0	0	610
07:00	0	0	486	17	23	1	0	527
08:00	0	0	457	12	29	2	0	500
09:00	0	0	432	10	25	1	0	468
10:00	0	0	401	13	24	2	0	440
11:00	0	0	438	5	28	1	0	472
12 PM	0	1	373	4	27	2	0	407
13:00	0	0	479	11	34	3	0	527
14:00	0	0	568	11	27	0	0	606
15:00	0	0	555	7	22	2	0	586
16:00	0	0	554	10	26	1	0	591
17:00	0	0	574	5	26	0	0	605
18:00	0	0	492	2	24	1	1	520
19:00	0	0	356	6	14	1	0	377
20:00	0	0	271	3	17	0	1	292
21:00	0	0	151	4	17	1	0	173
22:00	0	0	136	2	4	1	0	143
23:00	0	0	95	1	6	1	0	103
Total	0	1	8779	168	449	20	2	9419
Percent	0.0%	0.0%	93.2%	1.8%	4.8%	0.2%	0.0%	0.0%
AM Peak			05:00	07:00	08:00	08:00		05:00
Vol.			597	17	29	2		633
PM Peak		12:00	17:00	13:00	13:00	13:00	18:00	14:00
Vol.		1	574	11	34	3	1	606



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@odillc.com 154582 J Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

WB Right Lane			Office: 508.48	31.3999 Fax: 508.545.123 arequests@pdillc.com		Date Start: 24-Aug-15		
Start			Liliali. uat	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/24/15	0	0	69	3	3	0	0	75
01:00	0	0	19	0	2	0	0	21
02:00	0	0	25	0	1	1	0	27
03:00	0	0	137	3	11	1	0	152
04:00	0	0	470	9	17	4	0	500
05:00	0	0	690	12	13	1	0	716
06:00	0	0	716	8	16	2	0	742
07:00	0	0	646	19	27	7	0	699
08:00	0	0	453	13	37	4	0	507
09:00	0	0	448	10	39	3	1	501
10:00	0	0	419	10	35	2	0	466
11:00	0	0	392	10	40	1	0	443
12 PM	0	0	356	7	36	11	1	411
13:00	0	0	419	7	26	3	0	455
14:00	0	0	485	6	21	6	0	518
15:00	0	0	527	12	28	2	0	569
16:00	0	0	543	10	27	3	0	583
17:00	0	0	455	4	21	1	0	481
18:00	0	0	413	5	29	1	0	448
19:00	0	0	256	7	12	0	0	275
20:00	0	0	186	1	13	0	0	200
21:00	0	0	123	2	13	1	0	139
22:00	0	0	111	3	5	1	0	120
23:00	0	0	89	2	5	2	0	98
Total	0	0	8447	163	477	57	2	9146
Percent	0.0%	0.0%	92.4%	1.8%	5.2%	0.6%	0.0%	0.0%
AM Peak			06:00	07:00	11:00	07:00	09:00	06:00
Vol.			716	19	40	7	1	742
PM Peak			16:00	15:00	12:00	12:00	12:00	16:00
Vol.			543	12	36	11	1	583



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 154582 J Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

Right Lane			Date Start: 24-Aug-15					
Start			Email ad	arequests@pdillc.com Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/25/15	0	0	94	2	6	0	1	103
01:00	0	0	33	1	0	0	0	34
02:00	0	0	20	0	3	0	0	23
03:00	0	0	136	2	7	1	0	146
04:00	0	0	412	14	11	1	0	438
05:00	0	0	606	13	25	2	0	646
06:00	0	0	620	26	13	6	0	665
07:00	0	0	489	7	20	6	0	522
08:00	0	0	348	8	31	3	0	390
09:00	0	0	404	16	37	7	0	464
10:00	0	0	365	11	32	4	0	412
11:00	0	0	340	14	27	5	0	386
12 PM	0	1	354	10	33	7	0	405
13:00	0	0	429	11	40	4	0	484
14:00	0	0	433	15	22	4	0	474
15:00	0	0	472	7	23	1	0	503
16:00	0	0	483	7	22	0	0	512
17:00	0	0	438	10	29	0	0	477
18:00	0	0	352	7	25	1	0	385
19:00	0	0	258	8	12	1	0	279
20:00	0	0	209	4	18	0	0	231
21:00	0	0	100	3	12	1	0	116
22:00	0	0	124	2	5	1	0	132
23:00	0	0	108	1	10	0	0	119
Total	0	1	7627	199	463	55	1	8346
Percent	0.0%	0.0%	91.4%	2.4%	5.5%	0.7%	0.0%	0.0%
AM Peak			06:00	06:00	09:00	09:00	00:00	06:00
Vol.			620	26	37	7	1	665
PM Peak		12:00	16:00	14:00	13:00	12:00		16:00
Vol.		1	483	15	40	7		512



154582 ATR J CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

WB Left Lane				arequests@pdillc.com	27			_
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	37	0	0	0	0	37
01:00	0	0	22	1	1	0	0	24
02:00	0	0	42	0	0	0	0	42
03:00	0	0	185	3	4	0	0	192
04:00	0	0	439	9	7	0	0	455
05:00	0	0	687	17	5	2	0	711
06:00	0	0	576	17	11	3	0	607
07:00	0	0	408	7	9	2	0	426
08:00	0	0	399	10	10	3	0	422
09:00	0	0	280	3	10	2	0	295
10:00	0	0	204	5	6	0	0	215
11:00	0	0	226	9	9	0	0	244
12 PM	0	1	240	8	7	1	0	257
13:00	0	0	216	5	5	1	0	227
14:00	0	0	259	3	3	0	0	265
15:00	0	0	288	10	4	0	0	302
16:00	0	0	284	6	3	0	0	293
17:00	0	0	220	12	3	1	0	236
18:00	0	0	183	9	5	0	0	197
19:00	0	0	108	9	6	1	0	124
20:00	0	0	123	2	3	1	0	129
21:00	0	0	78	2	2	0	0	82
22:00	0	0	80	3	0	0	0	83
23:00	0	0	70	0	4	0	0	74
Total	0	1	5654	150	117	17	0	5939
Percent	0.0%	0.0%	95.2%	2.5%	2.0%	0.3%	0.0%	0.0%
AM Peak			05:00	05:00	06:00	06:00		05:00
Vol.			687	17	11	3		711
PM Peak		12:00	15:00	17:00	12:00	12:00		15:00
Vol.		1	288	12	7	1		302



154582 ATR J CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

WB Left Lane			Office: 508.48	31.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Star	i: 15-Aug-15
Start			Elliali: uai	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	34	0	4	0	0	38
01:00	0	0	46	1	3	0	0	50
02:00	0	0	36	0	2	1	0	39
03:00	0	0	182	1	4	2	0	189
04:00	0	0	484	10	12	1	0	507
05:00	0	0	503	7	6	1	0	517
06:00	0	0	535	18	7	1	0	561
07:00	0	0	559	10	9	0	0	578
08:00	0	0	461	11	8	1	0	481
09:00	0	0	362	11	11	2	0	386
10:00	0	0	272	8	3	1	0	284
11:00	0	0	317	7	5	0	0	329
12 PM	1	1	347	6	4	3	0	362
13:00	0	0	371	7	4	1	0	383
14:00	0	0	433	6	6	0	0	445
15:00	0	0	509	3	2	1	0	515
16:00	0	0	528	5	9	1	0	543
17:00	0	0	517	9	10	0	0	536
18:00	0	0	437	2	6	3	0	448
19:00	0	0	215	9	2	1	0	227
20:00	0	0	205	3	2	2	0	212
21:00	0	0	111	6	3	0	0	120
22:00	0	0	85	0	0	0	0	85
23:00	0	0	121	4	0	0	1	126
Total	1	1	7670	144	122	22	1	7961
Percent	0.0%	0.0%	96.3%	1.8%	1.5%	0.3%	0.0%	0.0%
AM Peak			07:00	06:00	04:00	03:00		07:00
Vol.			559	18	12	2		578
PM Peak	12:00	12:00	16:00	17:00	17:00	12:00	23:00	16:00
Vol.	1	1	528	9	10	3	1	543



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

154582 J Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

WB Left Lane			Office: 508.48 Email: dat	arequests@pdillc.com	34			
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/24/15	0	0	46	1	4	0	0	51
01:00	0	0	16	0	1	1	0	18
02:00	0	0	25	0	0	1	0	26
03:00	0	0	183	1	5	0	0	189
04:00	0	0	531	17	6	2	1	557
05:00	0	0	640	12	8	1	0	661
06:00	0	0	650	14	13	3	0	680
07:00	0	0	577	17	16	2	0	612
08:00	0	0	386	8	17	1	0	412
09:00	0	0	389	8	16	2	0	415
10:00	0	0	308	4	6	3	0	321
11:00	0	0	333	11	6	3	0	353
12 PM	0	1	363	17	0	3	0	384
13:00	0	0	337	7	9	4	0	357
14:00	0	0	408	6	5	2	0	421
15:00	0	0	432	13	7	1	0	453
16:00	0	0	359	13	3	2	0	377
17:00	0	1	387	1	8	2	0	399
18:00	0	0	303	1	4	0	0	308
19:00	0	0	181	8	3	1	0	193
20:00	0	0	111	4	5	1	0	121
21:00	0	0	72	3	4	1	0	80
22:00	0	0	70	1	1	2	0	74
23:00	0	0	110	5	2	2	0	119
Total	0	2	7217	172	149	40	1	7581
Percent	0.0%	0.0%	95.2%	2.3%	2.0%	0.5%	0.0%	0.0%
AM Peak			06:00	04:00	08:00	06:00	04:00	06:00
Vol.			650	17	17	3	1	680
PM Peak		12:00	15:00	12:00	13:00	13:00		15:00
Vol.		1	432	17	9	4		453



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 J Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

WB Left Lane				11.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Start	24-Aug-13
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/25/15	0	0	107	3	3	2	0	115
01:00	0	0	65	5	0	1	0	71
02:00	0	0	44	2	1	1	2	50
03:00	0	0	195	5	3	3	0	206
04:00	0	0	514	13	10	3	2	542
05:00	0	0	608	15	12	0	0	635
06:00	0	1	621	15	14	1	0	652
07:00	0	0	488	4	9	0	0	501
08:00	0	0	298	6	11	1	0	316
09:00	0	0	390	7	7	1	0	405
10:00	0	1	291	12	6	3	0	313
11:00	0	0	300	4	6	1	0	311
12 PM	0	0	315	18	9	2	0	344
13:00	0	0	345	6	4	0	1	356
14:00	0	1	324	9	4	2	0	340
15:00	1	0	405	7	8	1	0	422
16:00	0	0	390	8	3	1	0	402
17:00	0	0	331	11	6	1	0	349
18:00	0	0	274	6	3	0	0	283
19:00	0	0	154	2	6	0	0	162
20:00	0	2	131	4	3	0	0	140
21:00	0	0	73	2	4	0	0	79
22:00	0	0	84	2	5	3	0	94
23:00	0	0	157	2	0	2	0	161
Total	1	5	6904	168	137	29	5	7249
Percent	0.0%	0.1%	95.2%	2.3%	1.9%	0.4%	0.1%	0.0%
AM Peak		06:00	06:00	05:00	06:00	03:00	02:00	06:00
Vol.		11	621	15	14	3	2	652
PM Peak	15:00	20:00	15:00	12:00	12:00	22:00	13:00	15:00
Vol.	1	2	405	18	9	3	1	422



154582 ATR J CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com WB Right Lane, WB Left Lane

WB Right Lane, WB	Lett Lane		Email: data	arequests@pdillc.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	121	1	5	0	0	127
01:00	0	0	55	2	6	0	0	63
02:00	0	0	81	0	1	0	0	82
03:00	0	0	350	4	11	3	1	369
04:00	0	0	908	11	21	1	0	941
05:00	0	0	1266	34	28	3	0	1331
06:00	0	0	1202	33	35	4	0	1274
07:00	0	0	831	17	29	4	0	881
08:00	0	0	861	25	35	4	0	925
09:00	0	0	656	10	42	6	0	714
10:00	0	0	494	10	30	0	0	534
11:00	0	0	542	18	38	2	0	600
12 PM	0	1	518	18	38	1	0	576
13:00	0	0	496	18	36	2	0	552
14:00	0	0	663	9	24	2	0	698
15:00	0	0	650	18	28	1	1	698
16:00	0	0	668	16	26	0	0	710
17:00	0	0	569	16	26	1	0	612
18:00	0	0	437	17	26	0	0	480
19:00	0	0	331	15	16	1	0	363
20:00	0	0	311	7	14	1	0	333
21:00	0	0	233	4	14	1	0	252
22:00	0	0	205	5	4	0	0	214
23:00	0	0	161	2	9	0	0	172
Total	0	1	12609	310	542	37	2	13501
Percent	0.0%	0.0%	93.4%	2.3%	4.0%	0.3%	0.0%	0.0%
AM Peak			05:00	05:00	09:00	09:00	03:00	05:00
Vol.			1266	34	42	6	1	1331
PM Peak		12:00	16:00	12:00	12:00	13:00	15:00	16:00
Vol.		1	668	18	38	2	1	710



154582 ATR J CLASS (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234

WB Right Lane, WE	Rleftlane		Office: 508.48	31.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Star	t: 15-Aug-15
Start	D LCIT LATIC		Lillall. dat	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	125	1	7	0	0	133
01:00	0	0	111	2	4	0	0	117
02:00	0	0	71	0	4	1	0	76
03:00	0	0	346	3	14	2	0	365
04:00	0	0	916	23	31	1	0	971
05:00	0	0	1100	20	29	1	0	1150
06:00	0	0	1112	33	25	1	0	1171
07:00	0	0	1045	27	32	1	0	1105
08:00	0	0	918	23	37	3	0	981
09:00	0	0	794	21	36	3	0	854
10:00	0	0	673	21	27	3	0	724
11:00	0	0	755	12	33	1	0	801
12 PM	1	2	720	10	31	5	0	769
13:00	0	0	850	18	38	4	0	910
14:00	0	0	1001	17	33	0	0	1051
15:00	0	0	1064	10	24	3	0	1101
16:00	0	0	1082	15	35	2	0	1134
17:00	0	0	1091	14	36	0	0	1141
18:00	0	0	929	4	30	4	1	968
19:00	0	0	571	15	16	2	0	604
20:00	0	0	476	6	19	2	1	504
21:00	0	0	262	10	20	1	0	293
22:00	0	0	221	2	4	1	0	228
23:00	0	0	216	5	6	1	1	229
Total	1	2	16449	312	571	42	3	17380
Percent	0.0%	0.0%	94.6%	1.8%	3.3%	0.2%	0.0%	0.0%
AM Peak			06:00	06:00	08:00	08:00		06:00
Vol.			1112	33	37	3		1171
PM Peak	12:00	12:00	17:00	13:00	13:00	12:00	18:00	17:00
Vol.	1	2	1091	18	38	5	1	1141



154582 J Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

P.O. Box 301 Berlin, MA 01503
Office: 508.481.3999 Fax: 508.545.1234
WB Right Lane, WB Left Lane
Email: datarequests@pdillc.com

WB Right Lane, WE	s Lett Lane		Email: dat	arequests@pdillc.com				
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/24/15	0	0	115	4	7	0	0	126
01:00	0	0	35	0	3	1	0	39
02:00	0	0	50	0	1	2	0	53
03:00	0	0	320	4	16	1	0	341
04:00	0	0	1001	26	23	6	1	1057
05:00	0	0	1330	24	21	2	0	1377
06:00	0	0	1366	22	29	5	0	1422
07:00	0	0	1223	36	43	9	0	1311
08:00	0	0	839	21	54	5	0	919
09:00	0	0	837	18	55	5	1	916
10:00	0	0	727	14	41	5	0	787
11:00	0	0	725	21	46	4	0	796
12 PM	0	1	719	24	36	14	1	795
13:00	0	0	756	14	35	7	0	812
14:00	0	0	893	12	26	8	0	939
15:00	0	0	959	25	35	3	0	1022
16:00	0	0	902	23	30	5	0	960
17:00	0	1	842	5	29	3	0	880
18:00	0	0	716	6	33	1	0	756
19:00	0	0	437	15	15	1	0	468
20:00	0	0	297	5	18	1	0	321
21:00	0	0	195	5	17	2	0	219
22:00	0	0	181	4	6	3	0	194
23:00	0	0	199	7	7	4	0	217
Total	0	2	15664	335	626	97	3	16727
Percent	0.0%	0.0%	93.6%	2.0%	3.7%	0.6%	0.0%	0.0%
AM Peak			06:00	07:00	09:00	07:00	04:00	06:00
Vol.			1366	36	55	9	1	1422
PM Peak		12:00	15:00	15:00	12:00	12:00	12:00	15:00
Vol.		1	959	25	36	14	1	1022



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 J Class Redo Site Code: 13220.00 Date Start: 24-Aug-15

WB	Right	Lane,	WB	Left	Lane
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	Articulated	Single Unit		Light				Start
Total	Trucks	Heavy	Buses	Trucks	Cars	Motorcycles	Bicylcles	Time
218	1	2	9	5	201	0	0	08/25/15
105	0	1	0	6	98	0	0	01:00
73	2	1	4	2	64	0	0	02:00
352	0	4	10	7	331	0	0	03:00
980	2	4	21	27	926	0	0	04:00
1281	0	2	37	28	1214	0	0	05:00
1317	0	7	27	41	1241	1	0	06:00
1023	0	6	29	11	977	0	0	07:00
706	0	4	42	14	646	0	0	08:00
869	0	8	44	23	794	0	0	09:00
725	0	7	38	23	656	1	0	10:00
697	0	6	33	18	640	0	0	11:00
749	0	9	42	28	669	1	0	12 PM
840	1	4	44	17	774	0	0	13:00
814	0	6	26	24	757	1	0	14:00
925	0	2	31	14	877	0	1	15:00
914	0	1	25	15	873	0	0	16:00
826	0	1	35	21	769	0	0	17:00
668	0	1	28	13	626	0	0	18:00
441	0	1	18	10	412	0	0	19:00
371	0	0	21	8	340	2	0	20:00
195	0	1	16	5	173	0	0	21:00
226	0	4	10	4	208	0	0	22:00
280	0	2	10	3	265	0	0	23:00
15595	6	84	600	367	14531	6	1	Total
0.0%	0.0%	0.5%	3.8%	2.4%	93.2%	0.0%	0.0%	Percent
06:00	02:00	09:00	09:00	06:00	06:00	06:00		AM Peak
1317	2	8	44	41	1241	1		Vol.
15:00	13:00	12:00	13:00	12:00	15:00	20:00	15:00	PM Peak
925	1	9	44	28	877	2	1	Vol.



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 ATR J Volume (Sat-Sun) Site Code: 13220.00 Date Start: 15-Aug-15

Start		WB Right	t			WB Left				Comb	in		15-Aug-	
		Lane	•			Lane	9				Б		15	
Time	A.M.		P.M.		A.M.		P.M.		A.M.		P.M.		Sat	
12:00	20		89		14		59 67		34		148			
12:15	30		80		9		67		39		147			
12:30	34	00	81	240	8	0.7	66	057	42	407	147	F70		
12:45	6	90	69	319	6	37	65	257	12	127	134	576		
01:00	7		70		7		68		14		138			
01:15	10		74		9		54		19		128			
01:30	11	00	87	005	2	0.4	48	007	13	00	135	550		
01:45	11	39	94	325	6	24	57	227	17	63	151	552		
02:00	10		112		10		58		20		170			
02:15	8		89		11		53		19		142			
02:30	10		104		9		67		19		171			
02:45	12	40	128	433	12	42	87	265	24	82	215	698		
03:00	23		85		14		69		37		154			
03:15	30		96		38		65		68		161			
03:30	48		104		61		83		109		187			
03:45	76	177	111	396	79	192	85	302	155	369	196	698		
04:00	93		102		93		71		186		173			
04:15	89		91		86		72		175		163			
04:30	129		109		109		72		238		181			
04:45	175	486	115	417	167	455	78	293	342	941	193	710		
05:00	140		112		201		64		341		176			
05:15	146		87		166		68		312		155			
05:30	162		85		175		53		337		138			
05:45	172	620	92	376	169	711	51	236	341	1331	143	612		
06:00	170		88		166		72		336		160			
06:15	166		62		135		45		301		107			
06:30	156		75		155		48		311		123			
06:45	175	667	58	283	151	607	32	197	326	1274	90	480		
07:00	113	00.	66	_00	107		35		220		101	.00		
07:15	65		61		55		19		120		80			
07:30	153		49		136		25		289		74			
07:45	124	455	63	239	128	426	45	124	252	881	108	363		
08:00	122	100	46	200	103	120	35		225	001	81	000		
08:15	117		61		108		29		225		90			
08:30	123		59		107		37		230		96			
08:45	141	503	38	204	104	422	28	129	245	925	66	333		
09:00	113	000	51	201	85		21	120	198	020	72	000		
09:15	98		37		74		19		172		56			
09:30	101		41		66		32		167		73			
09:45	107	419	41	170	70	295	10	82	177	714	51	252		
10:00	84	. 10	38	.,,	62	_00	21	02	146		59	202		
10:05	84		40		45		20		129		60			
10:30	73		30		59		23		132		53			
10:45	78	319	23	131	49	215	19	83	127	534	42	214		
11:00	99	010	30	101	52	210	25	00	151	JJ-T	55	217		
11:15	88		18		60		19		148		37			
11:30	85		22		62		17		147		39			
11:45	84	356	28	98	70	244	13	74	154	600	41	172		
Total	4171	550	3391	30	3670	<u> </u>	2269		7841	000	5660	114		
Percent	53.2%		59.9%		46.8%		40.1%		1041		5000			
Day Total		756	2			593	39			1350	01			
Peak	05:30	_	02:00	_	05:00	_	03:30	_	04:45	_	03:30	_	-	
	00.00													
Vol.	670	-	433	-	711	-	311	-	1332	-	719	-	-	



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Start		WB Righ Lane	ıt			WB Left Lane				Comb ed	in		16-Aug- 15	
Time	A.M.	Lanc	P.M.		A.M.	Lan	P.M.		A.M.		P.M.		Sun	
12:00	12		101		13		76		25		177			
12:15	20		112		3		99		23		211			
12:30	33		85		12		101		45		186			
12:45	30	95	109	407	10	38	86	362	40	133	195	769		
01:00	11		116		17		85		28		201			
01:15	21		128		9		96		30		224			
01:30	24		146		15		105		39		251			
01:45	11	67	137	527	9	50	97	383	20	117	234	910		
02:00	1		156		8		102		9		258			
02:15	6		138		4		114		10		252			
02:30	9		157		10		118		19		275			
02:45	21	37	155	606	17	39	111	445	38	76	266	1051		
03:00	21	٥.	139	000	21		130		42		269			
03:15	38		134		44		104		82		238			
03:30	49		161		46		127		95		288			
03:45	68	176	152	586	78	189	154	515	146	365	306	1101		
04:00	85	170	129	500	100	100	143	010	185	300	272	1101		
04:00	113		159		114		148		227		307			
04.15			153		114		140		253		294			
	134	161		E01		E07		E 42		074		1121		
04:45	132	464	150	591	174	507	111	543	306	971	261	1134		
05:00	168		131		143		133		311		264			
05:15	146		164		131		133		277		297			
05:30	162	000	164		107		128	=00	269	4450	292			
05:45	157	633	146	605	136	517	142	536	293	1150	288	1141		
06:00	167		148		112		138		279		286			
06:15	151		127		170		124		321		251			
06:30	151		122		136		106		287		228			
06:45	141	610	123	520	143	561	80	448	284	1171	203	968		
07:00	150		121		142		69		292		190			
07:15	138		92		190		53		328		145			
07:30	125		75		125		55		250		130			
07:45	114	527	89	377	121	578	50	227	235	1105	139	604		
08:00	114		95		121		76		235		171			
08:15	126		65		127		49		253		114			
08:30	124		72		123		42		247		114			
08:45	136	500	60	292	110	481	45	212	246	981	105	504		
09:00	115		53		82		32		197		85			
09:15	124		49		103		40		227		89			
09:30	116		41		107		27		223		68			
09:45	113	468	30	173	94	386	21	120	207	854	51	293		
10:00	116		32		84		23		200		55			
10:15	113		24		62		25		175		49			
10:30	113		41		75		20		188		61			
10:45	98	440	46	143	63	284	17	85	161	724	63	228		
11:00	110	• •	29		72		19		182		48			
11:15	122		24		88		19		210		43			
11:30	127		29		85		51		212		80			
11:45	113	472	21	103	84	329	37	126	197	801	58	229		
Total	4489	.12	4930	.00	3959	320	4002	.20	8448	301	8932			
Percent	53.1%		55.2%		46.9%		44.8%		07-10		0002			
Day Total		941	19			796	61			173	80			
			05.45		00.00		00.45				00.45			
Poak	ეჳ∙ვე	_	()5.15	-	()6''3()	-	()'3'45	_	()6:30	_	()'3'45	_	_	
Peak Vol.	05:30 637	-	05:15 622	_	06:30 611	_	03:45 586	-	06:30 1191	-	03:45 1179	-	-	



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Start		WB Righ Lane	t			WB Left				Comb ed	in		24-Aug- 15	
Time	A.M.	Lane	P.M.		A.M.	Lane	P.M.		A.M.		P.M.		Mon	
12:00	23		86		8		90		31		176		WOII	
12:15	19		107		17		93		36		200			
12:30	15		103		18		100		33		203			
12:45	18	75	115	411	8	51	101	384	26	126	216	795		
01:00	10	75		411		31	90	304		120	192	195		
01:00			102 113		9		81		19		194			
01.15	5				3				8					
01:30	3	04	114	455	3	40	92	257	6	20	206	040		
01:45	3	21	126	455	3	18	94	357	6	39	220	812		
02:00	0		121		4		79		4		200			
02:15	8		114		4		120		12		234			
02:30	10		145		5		105		15		250			
02:45	9	27	138	518	13	26	117	421	22	53	255	939		
03:00	12		145		13		116		25		261			
03:15	32		141		34		106		66		247			
03:30	38		152		55		121		93		273			
03:45	70	152	131	569	87	189	110	453	157	341	241	1022		
04:00	83		167		111		90		194		257			
04:15	99		145		117		103		216		248			
04:30	139		128		156		96		295		224			
04:45	179	500	143	583	173	557	88	377	352	1057	231	960		
		500		303		557		311		1057		960		
05:00	170		126		204		104		374		230			
05:15	176		118		187		102		363		220			
05:30	180		118		150		101		330		219			
05:45	190	716	119	481	120	661	92	399	310	1377	211	880		
06:00	182		130		152		97		334		227			
06:15	203		116		171		69		374		185			
06:30	178		103		174		69		352		172			
06:45	179	742	99	448	183	680	73	308	362	1422	172	756		
07:00	184		74		178		57		362		131			
07:15	191		82		151		54		342		136			
07:30	158		59		164		41		322		100			
07:45	166	699	60	275	119	612	41	193	285	1311	101	468		
08:00	126	000	64	210	105	012	35	100	231	1011	99	400		
08:15	123		43		109		29		232		72			
08:30					94						80			
00.30	116	F07	46	200		440	34	101	210	010	70	224		
08:45	142	507	47	200	104	412	23	121	246	919	70	321		
09:00	110		41		101		21		211		62			
09:15	129		31		107		23		236		54			
09:30	132		30	4	102	4	18		234		48			
09:45	130	501	37	139	105	415	18	80	235	916	55	219		
10:00	149		26		95		18		244		44			
10:15	123		29		71		18		194		47			
10:30	91		36		78		16		169		52			
10:45	103	466	29	120	77	321	22	74	180	787	51	194		
11:00	96		25		88		23		184		48			
11:15	138		27		93		26		231		53			
11:30	107		20		85		35		192		55			
11:45	102	443	26	98	87	353	35	119	189	796	61	217		
Total Percent	4849 53.0%		4297 56.7%		4295 47.0%		3286 43.3%		9144		7583			
Day Total	22.0,0	914				758				167	27			
D!:	05:00		02.20		04.00		00.45		00:45		02:45			
Peak	05:30	-	03:30	-	04:30	-	02:45	-	06:15	-	02:45	-	-	
Vol.	755		595		720		460		1450		1036			



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 J Volume Redo Site Code: 13220.00 Date Start: 24-Aug-15

Start		WB Righ Lane				WB Left Lane				Comb ed	in		25-Aug- 15	
Time	A.M.	Lanc	P.M.		A.M.	Lanc	P.M.		A.M.		P.M.		Tue	
12:00	33		90		30		83		63		173			
12:15	32		93		38		96		70		189			
12:30	20		107		21		77		41		184			
12:45	18	103	115	405	26	115	88	344	44	218	203	749		
01:00	14		111		25		93		39		204			
01:15	5		120		24		82		29		202			
01:30	10		125		17		78		27		203			
01:45	5	34	128	484	5	71	103	356	10	105	231	840		
02:00	1		116		14		72		15		188			
02:15	3		133		6		87		9		220			
02:30	3		113		17		85		20		198			
02:45	16	23	112	474	13	50	96	340	29	73	208	814		
03:00	14		97		30		94		44		191			
03:15	31		129		38		99		69		228			
03:30	39		137		64		113		103		250			
03:45	62	146	140	503	74	206	116	422	136	352	256	925		
04:00	86		146		114		97		200		243			
04:15	77		134		109		111		186		245			
04:30	119		124		153		107		272		231			
04:45	156	438	108	512	166	542	87	402	322	980	195	914		
05:00	149	400	125	312	156	U+Z	96	702	305	300	221	317		
05:15	143		111		145		89		288		200			
05:30	176		123		152		93		328		216			
05:45	178	646	118	477	182	635	71	349	360	1201	189	826		
		040		4//		033		349		1281		020		
06:00	195		119		161		76		356		195			
06:15	157		98		187		69		344		167			
06:30	139	005	98	005	141	050	75	000	280	4047	173	000		
06:45	174	665	70	385	163	652	63	283	337	1317	133	668		
07:00	132		73		135		43		267		116			
07:15	136		64		131		41		267		105			
07:30	149		69		119		44		268		113			
07:45	105	522	73	279	116	501	34	162	221	1023	107	441		
08:00	114		63		86		36		200		99			
08:15	95		69		77		39		172		108			
08:30	93		52		80		33		173		85			
08:45	88	390	47	231	73	316	32	140	161	706	79	371		
09:00	111		45		101		25		212		70			
09:15	133		34		108		25		241		59			
09:30	101		19		101		14		202		33			
09:45	119	464	18	116	95	405	15	79	214	869	33	195		
10:00	97		39		89		34		186		73			
10:15	101		27		78		22		179		49			
10:30	123		36		79		21		202		57			
10:45	91	412	30	132	67	313	17	94	158	725	47	226		
11:00	91		21		76		16		167		37			
11:15	96		30		70		54		166		84			
11:30	99		37		84		43		183		80			
11:45	100	386	31	119	81	311	48	161	181	697	79	280		
Total Percent	4229 50.7%		4117 56.8%		4117 49.3%		3132 43.2%		8346		7249			
Day Total		834				724				1559	95			
D!	05,00		02.20		05.00		00.00		05:00		02.22			
Peak	05:30	-	03:30	-	05:30	-	03:30	-	05:30	-	03:30	-	-	
Vol.	706	-	557	-	682	-	437	-	1388	-	994	-	-	
P.H.F.	0.905		0.954		0.912		0.942		0.964		0.971			



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14/D D: 14/1			Office: 508.48	31.3999 Fax: 508.545.123	Date Start: 15-Aug-15			
WB Right Lane			Email: dat	arequests@pdillc.com		Circula I Init	A ti t	
Start	5		•	Light	-	Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	464	2	0	0	0	466
01:00	0	0	184	9	0	0	0	193
02:00	0	0	141	2	0	2	0	145
03:00	0	0	55	1	3	0	0	59
04:00	0	0	82	3	1	2	0	88
05:00	0	0	206	4	8	0	0	218
06:00	0	0	275	4	2	1	0	282
07:00	0	0	193	4	0	1	0	198
08:00	0	0	333	10	2	1	0	346
09:00	0	0	272	10	6	1	0	289
10:00	0	0	364	10	2	2	0	378
11:00	0	0	295	8	0	1	0	304
12 PM	0	0	253	7	4	1	0	265
13:00	0	1	175	9	3	0	0	188
14:00	0	0	274	5	0	0	0	279
15:00	0	0	289	11	2	0	0	302
16:00	0	0	421	24	0	0	0	445
17:00	0	0	442	9	6	4	3	464
18:00	0	0	396	15	4	0	0	415
19:00	0	0	285	0	0	0	0	285
20:00	0	0	244	7	2	0	0	253
21:00	0	0	378	13	3	0	0	394
22:00	0	1	480	14	2	0	0	497
23:00	0	0	269	6	1	0	0	276
Total	0	2	6770	187	51	16	3	7029
Percent	0.0%	0.0%	96.3%	2.7%	0.7%	0.2%	0.0%	0.0%
AM Peak			00:00	08:00	05:00	02:00		00:00
Vol.			464	10	8	2		466
PM Peak		13:00	22:00	16:00	17:00	17:00	17:00	22:00
Vol.		1	480	24	6	4	3	497
		•		- :	-	•	-	



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WB Right Lane				31.3999 Fax: 508.545.123 areguests@pdillc.com	Date Start: 15-Aug-15			
Start			Liliali. uat	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/16/15	0	0	369	16	3	0	0	388
01:00	0	0	410	12	1	3	0	426
02:00	0	0	119	5	2	0	0	126
03:00	0	0	37	0	1	0	0	38
04:00	0	0	98	3	1	0	0	102
05:00	0	0	152	6	5	1	0	164
06:00	0	0	216	8	6	1	0	231
07:00	0	0	235	2	6	1	0	244
08:00	0	0	306	8	0	0	0	314
09:00	Ö	0	228	6	2	0	0	236
10:00	0	0	413	10	0	1	0	424
11:00	0	0	358	14	0	0	0	372
12 PM	Ö	0	336	18	2	2	0	358
13:00	0	0	295	6	0	4	0	305
14:00	0	0	548	15	0	0	0	563
15:00	0	0	455	11	1	1	0	468
16:00	0	0	440	16	2	1	0	459
17:00	0	0	543	20	4	0	0	567
18:00	0	0	575	16	3	0	0	594
19:00	0	0	446	8	1	0	0	455
20:00	0	0	633	7	1	2	0	643
21:00	0	0	416	5	3	0	0	424
22:00	0	0	500	7	1	1	0	509
23:00	0	0	458	0	1	3	0	462
Total	0	0	8586	219	46	21	0	8872
Percent	0.0%	0.0%	96.8%	2.5%	0.5%	0.2%	0.0%	0.0%
AM Peak			10:00	00:00	06:00	01:00		01:00
Vol.			413	16	6	3		426
PM Peak		-	20:00	17:00	17:00	13:00	-	20:00
Vol.			633	20	4	4		643



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M/D Diabt Laws			Office: 508.48	1.3999 Fax: 508.545.123	Date Start: 15-Aug-15			
WB Right Lane Start			Email: dat	arequests@pdillc.com Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	681	12	6	0	0	699
01:00	0	0	225	5	3	0	0	233
02:00	0	0	113	4	1	1	0	119
03:00	0	0	43	0	2	1	0	46
04:00	0	0	99	2	7	2	0	110
05:00	0	0	278	5	10	2	0	295
06:00	Õ	Ö	341	8	9	0	Ö	358
07:00	0	0	281	8	1	3	0	293
08:00	0	0	351	11	2	0	0	364
09:00	0	0	268	17	0	0	0	285
10:00	0	0	295	18	1	1	0	315
11:00	0	0	385	8	1	2	1	397
12 PM	0	0	367	15	3	1	0	386
13:00	0	0	396	13	1	2	0	412
14:00	0	0	448	16	4	1	0	469
15:00	0	0	319	28	1	0	0	348
16:00	0	0	478	20	2	0	0	500
17:00	0	0	437	0	17	2	0	456
18:00	0	0	500	15	2	1	0	518
19:00	0	0	524	12	1	0	0	537
20:00	0	0	433	22	1	2	0	458
21:00	0	0	420	6	1	1	0	428
22:00	0	0	480	9	4	0	0	493
23:00	0	0	488	8	5	0	0	501
Total	0	0	8650	262	85	22	1	9020
Percent	0.0%	0.0%	95.9%	2.9%	0.9%	0.2%	0.0%	0.0%
AM Peak			00:00	10:00	05:00	07:00	11:00	00:00
Vol.			681	18	10	3	1	699
PM Peak	·		19:00	15:00	17:00	13:00	·	19:00
Vol.			524	28	17	2		537



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			Office: 508.48	31.3999 Fax: 508.545.123 arequests@pdillc.com					
WB Right Lane									
Start				Light		Single Unit	Articulated		
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total	
08/18/15	0	0	373	4	0	1	0	378	
01:00	0	0	188	7	0	0	0	195	
02:00	0	0	125	3	2	0	0	130	
03:00	0	0	63	1	1	1	0	66	
04:00	0	0	89	0	3	1	0	93	
05:00	0	0	216	2	5	6	0	229	
06:00	0	0	252	5	0	7	0	264	
07:00	0	0	187	3	0	1	0	191	
08:00	0	0	264	6	3	3	0	276	
09:00	0	0	251	8	2	1	0	262	
10:00	0	0	367	18	1	2	2	390	
11:00	0	0	391	11	2	4	0	408	
12 PM	0	0	277	12	0	1	2	292	
13:00	0	0	325	18	3	3	0	349	
14:00	0	0	451	22	4	2	0	479	
15:00	0	0	248	6	2	2	0	258	
16:00	0	0	268	7	2	1	0	278	
17:00	0	0	450	18	5	1	0	474	
18:00	0	0	541	23	3	1	0	568	
19:00	0	0	571	12	0	0	0	583	
20:00	0	0	417	12	2	0	0	431	
21:00	0	0	679	11	3	1	0	694	
22:00	0	0	387	15	2	1	0	405	
23:00	0	0	488	8	4	0	0	500	
Total	0	0	7868	232	49	40	4	8193	
Percent	0.0%	0.0%	96.0%	2.8%	0.6%	0.5%	0.0%	0.0%	
AM Peak			11:00	10:00	05:00	06:00	10:00	11:00	
Vol.			391	18	5	7	2	408	
PM Peak			21:00	18:00	17:00	13:00	12:00	21:00	
Vol.			679	23	5	3	2	694	



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				31.3999 Fax: 508.545.123	Date Start: 15-Aug-15			
WB Left Lane			Email: dat	arequests@pdillc.com		0. 1 11	A 22 1 4 1	
Start	D: 1.1		•	Light	_	Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	343	2	2	1	0	348
01:00	0	0	179	6	4	0	0	189
02:00	0	0	166	1	3	2	0	172
03:00	0	0	61	1	6	1	0	69
04:00	0	0	78	1	6	3	0	88
05:00	0	0	160	4	16	1	0	181
06:00	0	0	174	4	6	1	0	185
07:00	0	0	124	4	3	2	0	133
08:00	0	0	190	5	5	0	0	200
09:00	0	0	164	5	17	0	1	187
10:00	0	0	213	6	19	0	0	238
11:00	0	0	153	5	23	0	0	181
12 PM	0	0	170	9	20	0	0	199
13:00	0	0	156	6	27	1	0	190
14:00	0	0	263	11	20	0	0	294
15:00	0	0	265	13	23	0	0	301
16:00	0	0	282	12	21	1	0	316
17:00	0	0	468	20	14	1	6	509
18:00	0	0	397	4	23	0	0	424
19:00	0	0	281	0	19	0	0	300
20:00	0	1	200	5	16	0	0	222
21:00	0	0	353	8	18	0	0	379
22:00	0	0	448	3	9	1	0	461
23:00	0	0	485	11	3	0	0	499
Total	0	1	5773	146	323	15	7	6265
Percent	0.0%	0.0%	92.1%	2.3%	5.2%	0.2%	0.1%	0.0%
AM Peak			00:00	01:00	11:00	04:00	09:00	00:00
Vol.			343	6	23	3	1	348
PM Peak		20:00	23:00	17:00	13:00	13:00	17:00	17:00
Vol.		1	485	20	27	1	6	509



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WDlaftlana				Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com				Date Start: 15-Aug-15	
WB Left Lane Start			Email: dat	Light		Single Unit	Articulated		
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total	
08/16/15	Dicylcies 0	0	569	11	5	1 leavy	0	586	
00/10/13	0	0	360	5	4	0	0	369	
02:00	0	0	129	1	3	1	0	134	
03:00	0	0	42	1	3	1	0	45	
04:00	0	0	53	2	5 5	0	0	60	
05:00	0	0	130	۷	9	2	0	142	
	0	0		1	11	6	ŭ		
06:00	0	0	235	5		0	0	257	
07:00	0	0	212	3	8	1	0	224	
08:00	0	0	167	6	2	0	0	175	
09:00	0	0	167	4	17	2	0	190	
10:00	0	0	261	4	17	1	0	283	
11:00	0	0	237	8	21	0	0	266	
12 PM	0	0	332	6	17	1	0	356	
13:00	0	0	255	11	16	2	0	284	
14:00	0	0	368	11	23	0	0	402	
15:00	0	0	361	12	27	0	1	401	
16:00	0	0	367	9	22	2	0	400	
17:00	0	0	539	18	21	0	0	578	
18:00	0	0	506	11	23	2	0	542	
19:00	0	0	631	7	21	1	0	660	
20:00	0	0	523	3	15	1	0	542	
21:00	0	0	383	6	21	2	0	412	
22:00	0	0	466	4	8	0	0	478	
23:00	0	0	455	4	3	2	0	464	
Total	0	0	7748	152	322	27	1	8250	
Percent	0.0%	0.0%	93.9%	1.8%	3.9%	0.3%	0.0%	0.0%	
AM Peak			00:00	00:00	11:00	06:00		00:00	
Vol.			569	11	21	6		586	
PM Peak			19:00	17:00	15:00	13:00	15:00	19:00	
Vol.			631	18	27	2	1	660	



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154582 ATR L Class Site Code: 13220.00 Date Start: 15-Aug-15

WB Left Lane				arequests@pdillc.com				_
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	593	4	4	0	0	601
01:00	0	0	262	8	8	1	0	279
02:00	0	0	121	1	5	0	0	127
03:00	0	0	34	3	2	2	0	41
04:00	0	0	134	1	10	0	0	145
05:00	0	0	241	2	8	4	0	255
06:00	0	0	357	4	16	1	0	378
07:00	0	0	292	5	6	3	0	306
08:00	0	0	410	5	9	1	1	426
09:00	0	0	260	8	17	1	3	289
10:00	0	1	344	9	16	2	3	375
11:00	0	0	300	6	21	2	4	333
12 PM	0	0	349	16	21	2	2	390
13:00	0	0	313	9	19	2	1	344
14:00	0	0	389	16	19	1	3	428
15:00	0	0	311	14	21	1	0	347
16:00	0	0	421	7	25	2	0	455
17:00	0	0	373	0	13	23	0	409
18:00	0	0	447	8	20	0	0	475
19:00	0	0	357	9	24	0	0	390
20:00	0	0	362	11	19	1	0	393
21:00	0	0	363	5	19	2	0	389
22:00	0	0	439	6	3	0	0	448
23:00	0	0	422	3	6	4	0	435
Total	0	1	7894	160	331	55	17	8458
Percent	0.0%	0.0%	93.3%	1.9%	3.9%	0.7%	0.2%	0.0%
AM Peak		10:00	00:00	10:00	11:00	05:00	11:00	00:00
Vol.		1	593	9	21	4	4	601
PM Peak			18:00	12:00	16:00	17:00	14:00	18:00
Vol.			447	16	25	23	3	475

Vol.



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 154582 ATR L Class Site Code: 13220.00 Date Start: 15-Aug-15

eft Lane				31.3999 Fax: 508.545.123 arequests@pdillc.com		Date Start: 15-Aug-15		
Start			Liliali. uat	Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	308	3	6	2	0	319
01:00	Ô	0	212	1	7	3	Ô	223
02:00	Ô	0	145	6	2	0	Ô	153
03:00	0	0	100	1	6	0	0	107
04:00	0	0	74	2	7	2	0	85
05:00	0	0	200	3	10	5	0	218
06:00	0	0	316	11	3	7	0	337
07:00	0	0	245	5	1	3	0	254
08:00	0	0	294	8	4	3	0	309
09:00	0	0	287	7	11	3	5	313
10:00	0	0	305	13	13	3	2	336
11:00	0	0	250	10	18	4	3	285
12 PM	0	0	315	11	19	5	3	353
13:00	0	0	326	25	21	1	0	373
14:00	0	1	346	14	20	0	1	382
15:00	0	0	324	8	22	1	0	355
16:00	0	0	319	6	18	0	0	343
17:00	0	0	474	9	19	1	0	503
18:00	0	0	459	17	22	3	0	501
19:00	0	0	491	11	20	0	0	522
20:00	0	0	528	5	22	4	0	559
21:00	0	0	685	6	22	0	0	713
22:00	0	0	456	9	6	1	0	472
23:00	0	0	435	13	9	2	0	459
Total	0	1	7894	204	308	53	14	8474
Percent	0.0%	0.0%	93.2%	2.4%	3.6%	0.6%	0.2%	0.0%
AM Peak			06:00	10:00	11:00	06:00	09:00	06:00
Vol.			316	13	18	7	5	337
PM Peak		14:00	21:00	13:00	15:00	12:00	12:00	21:00
							_	

25

22

5

3

713

685

Vol.

Vol.

Percent

AM Peak

PM Peak



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2.8%

05:00

13:00

24

30

0.2%

04:00

17:00

5

0.0%

00:00

17:00

814

973

0.1%

09:00

17:00

9

154582 ATR L Class Site Code: 13220.00 Date Start: 15-Aug-15

B Right Lane, WE	B Left Lane			31.3999 Fax: 508.545.123 arequests@pdillc.com	34		Date Clark	10 / tug 10
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/15/15	0	0	807	4	2	1	0	814
01:00	0	0	363	15	4	0	0	382
02:00	0	0	307	3	3	4	0	317
03:00	0	0	116	2	9	1	0	128
04:00	0	0	160	4	7	5	0	176
05:00	0	0	366	8	24	1	0	399
06:00	0	0	449	8	8	2	0	467
07:00	0	0	317	8	3	3	0	331
08:00	0	0	523	15	7	1	0	546
09:00	0	0	436	15	23	1	1	476
10:00	0	0	577	16	21	2	0	616
11:00	0	0	448	13	23	1	0	485
12 PM	0	0	423	16	24	1	0	464
13:00	0	1	331	15	30	1	0	378
14:00	0	0	537	16	20	0	0	573
15:00	0	0	554	24	25	0	0	603
16:00	0	0	703	36	21	1	0	761
17:00	0	0	910	29	20	5	9	973
18:00	0	0	793	19	27	0	0	839
19:00	0	0	566	0	19	0	0	585
20:00	0	1	444	12	18	0	0	475
21:00	0	0	731	21	21	0	0	773
22:00	0	1	928	17	11	1	0	958
23:00	0	0	754	17	4	0	0	775
Total	0	3	12543	333	374	31	10	13294
D	0.00/	0.00/	0 4 407	0 =0/	0.00/	0.00/	0.40/	0.00/

2.5%

10:00

16:00

16

36

94.4%

00:00

22:00

807

928

0.0%

13:00

0.0%



154582 ATR L Class Site Code: 13220.00 Date Start: 15-Aug-15

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VVL	Kigiit Laile, WD	Len Lane		Elliali: uati	arequests@pullic.com				
	Start				Light		Single Unit	Articulated	
	Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
	08/16/15	0	0	938	27	8	1	0	974
	01:00	0	0	770	17	5	3	0	795
	02:00	0	0	248	6	5	1	0	260
	03:00	0	0	79	0	4	0	0	83
	04:00	0	0	151	5	6	0	0	162
	05:00	0	0	282	7	14	3	0	306
	06:00	0	0	451	13	17	7	0	488
	07:00	0	0	447	5	14	2	0	468
	08:00	0	0	473	14	2	0	0	489
	09:00	0	0	395	10	19	2	0	426
	10:00	0	0	674	14	17	2	0	707
	11:00	0	0	595	22	21	0	0	638
	12 PM	0	0	668	24	19	3	0	714
	13:00	0	0	550	17	16	6	0	589
	14:00	0	0	916	26	23	0	0	965
	15:00	0	0	816	23	28	1	1	869
	16:00	0	0	807	25	24	3	0	859
	17:00	0	0	1082	38	25	0	0	1145
	18:00	0	0	1081	27	26	2	0	1136
	19:00	0	0	1077	15	22	1	0	1115
	20:00	0	0	1156	10	16	3	0	1185
	21:00	0	0	799	11	24	2	0	836
	22:00	0	0	966	11	9	1	0	987
	23:00	0	0	913	4	4	5	0	926
	Total	0	0	16334	371	368	48	1	17122
	Percent	0.0%	0.0%	95.4%	2.2%	2.1%	0.3%	0.0%	0.0%
	AM Peak			00:00	00:00	11:00	06:00		00:00
	Vol.			938	27	21	7		974
	PM Peak			20:00	17:00	15:00	13:00	15:00	20:00
	Vol.			1156	38	28	6	1	1185

Vol.

Vol.

PM Peak



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WB Right Lane, W	/B Left Lane		Email: dat					
Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/17/15	0	0	1274	16	10	0	0	1300
01:00	0	0	487	13	11	1	0	512
02:00	0	0	234	5	6	1	0	246
03:00	0	0	77	3	4	3	0	87
04:00	0	0	233	3	17	2	0	255
05:00	0	0	519	7	18	6	0	550
06:00	0	0	698	12	25	1	0	736
07:00	0	0	573	13	7	6	0	599
08:00	0	0	761	16	11	1	1	790
09:00	0	0	528	25	17	1	3	574
10:00	0	1	639	27	17	3	3	690
11:00	0	0	685	14	22	4	5	730
12 PM	0	0	716	31	24	3	2	776
13:00	0	0	709	22	20	4	1	756
14:00	0	0	837	32	23	2	3	897
15:00	0	0	630	42	22	1	0	695
16:00	0	0	899	27	27	2	0	955
17:00	0	0	810	0	30	25	0	865
18:00	0	0	947	23	22	1	0	993
19:00	0	0	881	21	25	0	0	927
20:00	0	0	795	33	20	3	0	851
21:00	0	0	783	11	20	3	0	817
22:00	0	0	919	15	7	0	0	941
23:00	0	0	910	11	11	4	0	936
Total	0	1	16544	422	416	77	18	17478
Percent	0.0%	0.0%	94.7%	2.4%	2.4%	0.4%	0.1%	0.0%
AM Peak		10:00	00:00	10:00	06:00	05:00	11:00	00:00
111			4074	~=	0.5	•	_	4000

27

42

17:00

30

17:00

25

15:00

1274

18:00

947

1300

18:00 993

14:00 3



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WB Right Lane, W	VB Left Lane
------------------	--------------

Start				Light		Single Unit	Articulated	
Time	Bicylcles	Motorcycles	Cars	Trucks	Buses	Heavy	Trucks	Total
08/18/15	0	0	681	7	6	3	0	697
01:00	0	0	400	8	7	3	0	418
02:00	0	0	270	9	4	0	0	283
03:00	0	0	163	2	7	1	0	173
04:00	0	0	163	2	10	3	0	178
05:00	0	0	416	5	15	11	0	447
06:00	0	0	568	16	3	14	0	601
07:00	0	0	432	8	1	4	0	445
08:00	0	0	558	14	7	6	0	585
09:00	0	0	538	15	13	4	5	575
10:00	0	0	672	31	14	5	4	726
11:00	0	0	641	21	20	8	3	693
12 PM	0	0	592	23	19	6	5	645
13:00	0	0	651	43	24	4	0	722
14:00	0	1	797	36	24	2	1	861
15:00	0	0	572	14	24	3	0	613
16:00	0	0	587	13	20	1	0	621
17:00	0	0	924	27	24	2	0	977
18:00	0	0	1000	40	25	4	0	1069
19:00	0	0	1062	23	20	0	0	1105
20:00	0	0	945	17	24	4	0	990
21:00	0	0	1364	17	25	1	0	1407
22:00	0	0	843	24	8	2	0	877
23:00	0	0	923	21	13	2	0	959
Total	0	1	15762	436	357	93	18	16667
Percent	0.0%	0.0%	94.6%	2.6%	2.1%	0.6%	0.1%	0.0%
AM Peak			00:00	10:00	11:00	06:00	09:00	10:00
Vol.			681	31	20	14	5	726
PM Peak		14:00	21:00	13:00	18:00	12:00	12:00	21:00
Vol.		1	1364	43	25	6	5	1407



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Start		WB Righ	ıt				WB Left			Comb ed		15-Aug- 15		
Time	A.M.	Lane	Lane Lane P.M. A.M. P.M.			A.M.		P.M.		Sat				
12:00	104		64		90		39		194		103			
12:15	116		76		104		61		220		137			
12:30	146		74		87		52		233		126			
12:45	100	466	51	265	67	348	47	199	167	814	98	464		
01:00	81	100	61	200	73	010	52	100	154	011	113	101		
01:15	54		52		33		39		87		91			
01:30	26		29		23		46		49		75			
01:45	32	193	46	188	60	189	53	190	92	382	99	378		
02:00	29	195	62	100	41	103	76	130	70	302	138	370		
02:00	52		99		52		92		104		191			
02:13	42				43		58				126			
02.30		115	68	270		470		204	85 50	247		E70		
02:45	22	145	50 67	279	36	172	68 75	294	58	317	118	573		
03:00	14		67		32		75 70		46		142			
03:15	14		66		14		79 74		28		145			
03:30	10		80	000	11	00	71	004	21	400	151	000		
03:45	21	59	89	302	12	69	76	301	33	128	165	603		
04:00	15		104		11		62		26		166			
04:15	9		84		20		71		29		155			
04:30	28		106		21		90	0.4.0	49	470	196	704		
04:45	36	88	151	445	36	88	93	316	72	176	244	761		
05:00	26		137		35		138		61		275			
05:15	44		96		49		122		93		218			
05:30	76		96		47		106		123		202			
05:45	72	218	135	464	50	181	143	509	122	399	278	973		
06:00	70		144		28		154		98		298			
06:15	84		94		44		92		128		186			
06:30	67		104		83		83		150		187			
06:45	61	282	73	415	30	185	95	424	91	467	168	839		
07:00	51		102		32		91		83		193			
07:15	33		66		13		73		46		139			
07:30	36		65		25		92		61		157			
07:45	78	198	52	285	63	133	44	300	141	331	96	585		
08:00	91		63		53		49		144		112			
08:15	95		69		50		91		145		160			
08:30	83		52		39		30		122		82			
08:45	77	346	69	253	58	200	52	222	135	546	121	475		
09:00	96		84		53		101		149		185			
09:15	48		85		29		80		77		165			
09:30	38		105		39		93		77		198			
09:45	107	289	120	394	66	187	105	379	173	476	225	773		
10:00	98		99		53		130		151	• •	229			
10:15	103		155		63		128		166		283			
10:30	99		143		64		100		163		243			
10:35	78	378	100	497	58	238	103	461	136	616	203	958		
11:00	81	370	64	731	48	200	150	701	129	010	214	550		
11:15	101		77		41		120		142		197			
11:30	56		64		37		111		93		175			
11:45	66	304	71	276	55	181	118	499	121	485	189	775		
Total	2966	304	4063	210	2171	101	4094	733	5137	400	8157	113		
Percent	57.7%		49.8%		42.3%		50.2%		5131		0101			
Day Total		702	29			626	65			132	94			
Peak	12:00	_	09:45	_	12:00	_	05:15	_	12:00	_	05:15	_	-	
Vol.	466	_	517	_	348		525	-	814		996			
VOI														



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Lane Lane	Start		WB Right				WB Left				Comb			16-Aug-	
12:00		Lane						Э			ed			15	
12:15														Sun	
12:30															
12.45															
01:00 130 57 121 54 251 111 111 111 111 111 111 111 111 111															
Oli:15		125	388	80	358		586		356		974		714		
Oli:15	01:00	130		57		121		54		251		111			
O11:30	01:15	105		72		100		55		205		127			
01:45		127		66				81		223		147			
O2:00 20		64	426	110	305	52	369	94	284	116	795		589		
02:15 17 142 32 96 49 238 02:30 60 166 61 132 121 298 02:45 29 126 143 563 30 134 98 402 59 260 241 965 03:00 10 82 19 64 29 146 10 235 03:30 7 118 9 104 16 222 23 23 10 148 8 9 45 121 401 19 83 266 869 204:00 10 117 12 136 22 253 3 669 04:00 10 117 12 136 22 253 3 669 04:00 10 117 42 226 260 04:30 26 102 14 459 23 60 90 400 57 162 211 859 285 05:															
02:30 60 166 61 132 121 298 20245 29 146 330 34 98 402 59 260 241 965 3000 10 82 19 64 29 146 335 30330 7 118 9 104 16 222 335 330330 7 118 9 45 121 401 19 83 266 869 3045 10 38 145 468 9 45 121 401 19 83 266 869 3045 32 119 10 107 42 226 335 335 341 32 119 10 107 42 226 345 34 102 121 459 23 60 90 400 57 162 211 859 365	02:15														
02:45 29 126 143 563 30 134 98 402 59 260 241 965 03:05 10 82 19 64 29 146 235 03:15 11 123 8 112 19 235 03:36 10 38 145 468 9 45 121 401 19 83 266 869 04:00 10 117 12 136 22 253 265 04:00 119 10 107 42 226 263 04:15 32 119 10 107 42 226 263 04:15 33 141 169 225 263 04:15 33 141 169 226 11 169 04:45 34 102 121 459 23 60 90 400 57 162 211 859 265 66 65:15 34	02:30														
03:00	02:45		126		563		134		402		260		965		
03:15 11 123 8 112 19 235 03:30 7 118 9 104 16 222 03:45 10 38 145 468 9 45 121 401 19 83 266 869 04:00 10 117 12 136 22 253 04:15 32 119 10 107 42 226 04:30 26 102 15 67 41 169 04:45 34 102 121 459 23 60 90 400 57 162 211 859 05:00 30 148 29 137 59 285 56 216 153 43 123 89 276 306 257 31 179 67 306 278 1145 66 134 139 567 39 142 139 578 91<	03:00		0		000				.02				000		
03:30 7 118 9 104 16 222 03:45 10 38 145 468 9 45 121 401 19 83 266 869 04:00 10 117 12 136 22 253 04:15 32 119 10 107 42 226 04:30 26 102 15 67 41 169 04:45 34 102 121 459 23 60 90 400 57 162 211 859 05:00 30 148 29 137 59 285 05:15 36 127 31 179 67 306 05:30 46 153 43 123 89 276 05:30 46 153 43 123 89 276 06:30 35 153 42 122 77 31 31 23 89 276 06:45 52 164 139 567 39 142 139 578 91 306 278 1145 06:00 35 153 42 122 77 275 06:15 49 133 67 128 116 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 07:15 67 80 51 224 77 660 111 468 215 1115 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 99 24 112 122 249 09:30 35 99 24 125 59 224 09:30 35 99 24 125 12 189 233 10:00 90:00 85 132 12 17 156 79 146 189 228 09:15 59 125 53 190 67 412 192 426 135 836 10:00 90:00 85 132 12 17 156 79 146 150 228 09:15 59 125 53 190 67 412 92 426 135 836 10:00 90:00 85 132 12 12 17 77 112 189 233 10:00 10:15 112 121 77 112 189 233 10:00 10:15 112 121 77 112 189 233 10:00 10:15 112 121 77 112 189 233 10:00 10:15 112 121 77 112 189 233 10:00 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196															
03:45	03:30											222			
04:00	03:45		38		468		15		401		83	266	860		
04:15 32 119 10 107 42 226 04:30 26 102 15 67 41 169 04:45 34 102 121 459 23 60 90 400 57 162 221 859 05:00 30 148 29 137 59 285 50 515 36 127 31 179 67 306 285 306	03.43		30		400		40		401		03		009		
04:30	04.00														
04:45 34 102 121 459 23 60 90 400 57 162 211 859 05:05 30 148 29 137 59 285 285 05:15 36 127 31 179 67 306 276 05:30 46 153 43 123 89 276 05:45 52 164 139 567 39 142 139 578 91 306 278 1145 06:00 35 153 42 122 77 275 261 66:15 49 133 67 128 116 261	04.15											160			
05:00 30 148 29 137 59 285 05:15 36 127 31 179 67 306 05:30 46 153 43 123 89 276 05:45 52 164 139 567 39 142 139 578 91 306 278 1145 06:00 35 153 42 122 77 275 275 06:15 49 133 67 128 116 261 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 136 07:15 67 80 51 235 118 315 1136 07:30 49 118 43 137 9	04.30		100		450		60		400		460		050		
05:15 36 127 31 179 67 306 05:30 46 153 43 123 89 276 05:45 52 164 139 567 39 142 139 578 91 306 278 1145 06:00 35 153 42 122 77 275 06:15 49 133 67 128 116 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 07:15 67 80 51 235 118 315 1136 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 <td>04:45</td> <td></td> <td>102</td> <td></td> <td>459</td> <td>23</td> <td>60</td> <td></td> <td>400</td> <td></td> <td>102</td> <td></td> <td>859</td> <td></td> <td></td>	04:45		102		459	23	60		400		102		859		
05:30 46 153 43 123 89 276 05:45 52 164 139 567 39 142 139 578 91 306 278 1145 06:00 35 153 42 122 77 275 06:15 49 133 67 128 116 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 315 07:15 67 80 51 235 118 315 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:05 52 143 48 126 100 269 1115 2						29									
05:45 52 164 139 567 39 142 139 578 91 306 278 1145 06:00 35 153 42 122 77 275 06:15 49 133 67 128 116 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 136 07:15 67 80 51 235 118 315 136 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:05 78 158 28 106 106 <td>05:15</td> <td></td>	05:15														
06:00 35 153 42 122 77 275 06:15 49 133 67 128 116 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 07:15 67 80 51 235 118 315 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119			404				4.40								
06:15 49 133 67 128 116 261 06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 07:15 67 80 51 235 118 315 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 <td></td> <td>52</td> <td>164</td> <td></td> <td>567</td> <td></td> <td>142</td> <td></td> <td>578</td> <td></td> <td>306</td> <td></td> <td>1145</td> <td></td> <td></td>		52	164		567		142		578		306		1145		
06:30 51 148 52 137 103 285 06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 07:15 67 80 51 235 118 315 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>															
06:45 96 231 160 594 96 257 155 542 192 488 315 1136 07:00 68 119 79 211 147 330 07:15 67 80 51 235 118 315 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr<>															
07:00 68 119 79 211 147 330 07:15 67 80 51 235 118 315 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59															
07:15 67 80 51 235 118 315 07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35			231		594		257		542		488		1136		
07:30 49 118 43 137 92 255 07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836															
07:45 60 244 138 455 51 224 77 660 111 468 215 1115 08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 150	07:15	67		80		51		235		118					
08:00 52 143 48 126 100 269 08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 10:15 112 121 77 112 189 233 10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 </td <td>07:30</td> <td></td>	07:30														
08:15 78 158 28 106 106 264 08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 150 150 112 121 77 112 189 233 110:30 115 158 72 141 187 299 299 141 187 299 111 174 107 156 218 11:00 82 111 74 107 156 218 11:15 </td <td></td> <td></td> <td>244</td> <td>138</td> <td>455</td> <td>51</td> <td>224</td> <td>77</td> <td>660</td> <td>111</td> <td>468</td> <td>215</td> <td>1115</td> <td></td> <td></td>			244	138	455	51	224	77	660	111	468	215	1115		
08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 150 150 112 121 77 112 189 233 112 10:30 115 158 72 141 187 299 299 141 187 299 141 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112	08:00	52		143		48		126		100		269			
08:30 88 188 31 180 119 368 08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 150 150 112 121 77 112 189 233 112 10:30 115 158 72 141 187 299 299 141 187 299 141 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112 112	08:15	78		158		28		106		106		264			
08:45 96 314 154 643 68 175 130 542 164 489 284 1185 09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150	08:30	88		188		31		180		119		368			
09:00 85 132 78 96 163 228 09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150			314	154	643	68	175		542	164	489		1185		
09:15 59 125 53 124 112 249 09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 10:15 112 121 77 112 189 233 10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269		85		132		78		96		163		228			
09:30 35 99 24 125 59 224 09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 10:15 112 121 77 112 189 233 10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269															
09:45 57 236 68 424 35 190 67 412 92 426 135 836 10:00 90 71 56 79 146 150 10:15 112 121 77 112 189 233 10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269															
10:00 90 71 56 79 146 150 10:15 112 121 77 112 189 233 10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269			236		424		190		412		426		836		
10:15 112 121 77 112 189 233 10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269															
10:30 115 158 72 141 187 299 10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269															
10:45 107 424 159 509 78 283 146 478 185 707 305 987 11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269	10:30											299			
11:00 82 111 74 107 156 218 11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269			424		509		283		478		707		987		
11:15 95 93 70 103 165 196 11:30 126 123 68 146 194 269							_00				. • •				
11:30 126 123 68 146 194 269															
			372		462		266		464		638		926		
Total 3065 5807 2731 5519 5796 11326			512		702				.0-		300		020		
Percent 52.9% 51.3% 47.1% 48.7%										0.00		11020			
Day Total 8872 8250 17122	Day Total		887	'2			825	50			171	22			
Peak 00:45 - 08:00 - 12:00 - 06:30 - 00:15 - 06:30	Poak	00:45	_	08.00	_	12:00	_	06·30	_	00.15	_	06·30	_	_	
Vol. 487 - 643 - 586 - 738 - 982 - 1245			-		-		-		-		-		-	-	
P.H.F. 0.937 0.855 0.847 0.785 0.886 0.943			-		-		-		-		-		-	-	

Terminal Area Roadway Arrival Level west of Terminal E Arrival Level Entrance City, State: Boston, MA Client: VHB/ A. Costa



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 ATR L Volume Site Code: 13220.00 Date Start: 15-Aug-15

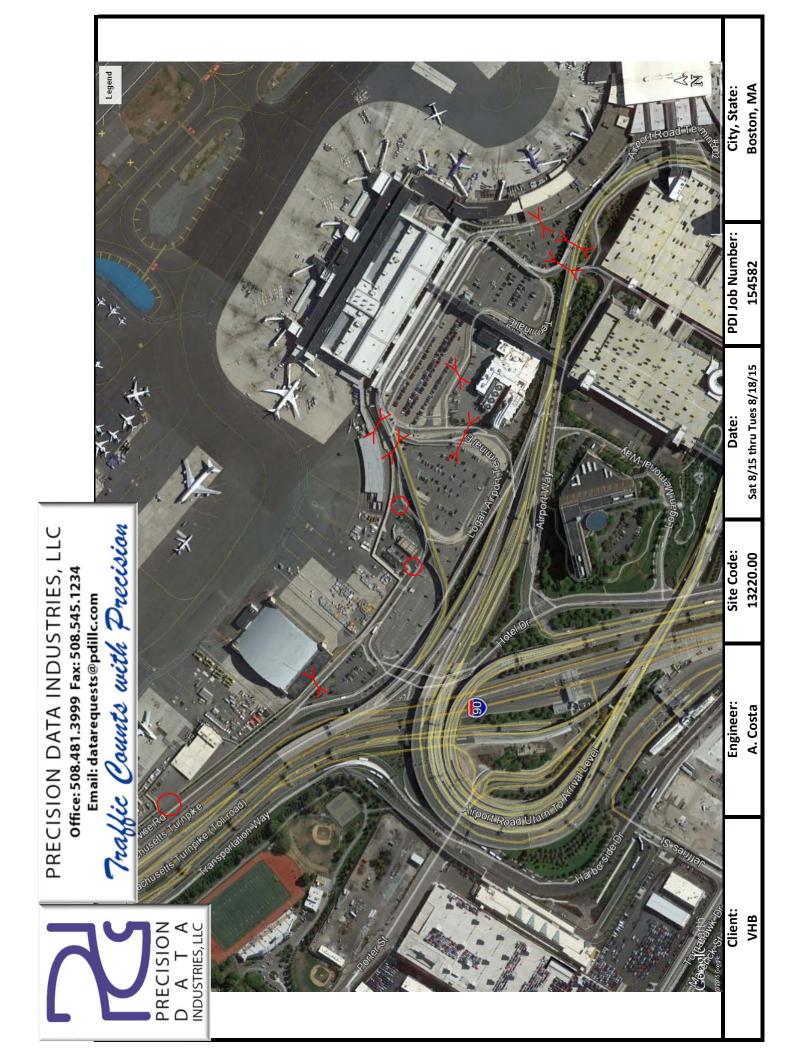
Start		WB Righ Lane	t			WB Left Land	t			Comb ed	in		17-Aug- 15
Time	A.M.	Lane	P.M.		A.M.	Lan	P.M.		A.M.		P.M.		Mon
12:00	141		72		131		70		272		142		
12:15	181		88		168		107		349		195		
12:30	194		125		138		109		332		234		
12:45	183	699	101	386	164	601	104	390	347	1300	205	776	
01:00	85	000	85	300	116	001	76	550	201	1300	161	770	
01:00	78		84		121		91		199		175		
01:30	42	000	131	440	27	070	78	0.4.4	69	= 4.0	209	750	
01:45	28	233	112	412	15	279	99	344	43	512	211	756	
02:00	32		121		34		101		66		222		
02:15	28		138		30		109		58		247		
02:30	31		114		41		112		72		226		
02:45	28	119	96	469	22	127	106	428	50	246	202	897	
03:00	18		93		6		86		24		179		
03:15	10		70		11		76		21		146		
03:30	9		87		9		87		18		174		
03:45	9	46	98	348	15	41	98	347	24	87	196	695	
04:00	13	40	106	5-10	18	71	100	0-11	31	0,	206	550	
04:00	14		118		21		122		35		240		
04:13	32		130		47		111		79		241		
04:30	52 51	110	146	500	59	145	122	455	110	255	268	955	
04:40		110		300		145		400		255		900	
05:00	53		146		55 64		137		108		283		
05:15	70		132		64		111		134		243		
05:30	94		85		72		78		166		163		
05:45	78	295	93	456	64	255	83	409	142	550	176	865	
06:00	79		108		116		93		195		201		
06:15	110		146		107		121		217		267		
06:30	93		138		89		139		182		277		
06:45	76	358	126	518	66	378	122	475	142	736	248	993	
07:00	36		189	3.0	55	٥.٠	162		91		351		
07:15	58		159		50		112		108		271		
07:13	72		119		74		61		146		180		
07:30	127	293	70	537	127	306	55	390	254	599	125	927	
08:00	93	233	70 84	331	144	300	71	330	237	299	155	321	
08:15	82		112		74		82		156		194		
08:30	106	o = :	121	,	92	,	116		198		237	o-:	
08:45	83	364	141	458	116	426	124	393	199	790	265	851	
09:00	95		120		119		127		214		247		
09:15	66		102		68		92		134		194		
09:30	55		96		38		91		93		187		
09:45	69	285	110	428	64	289	79	389	133	574	189	817	
10:00	86		99		79		72		165		171		
10:15	62		130		82		104		144		234		
10:30	70		117		93		143		163		260		
10:45	97	315	147	493	121	375	129	448	218	690	276	941	
11:00	123	010	166	400	131	575	145	770	254	330	311	J-T I	
11:15	98 05		130		71 52		105		169		235		
11:30	95	007	100	F04	53	000	93	405	148	700	193	000	
11:45	81	397	105	501	78	333	92	435	159	730	197	936	
Total Percent	3514 49.7%		5506 52.9%		3555 50.3%		4903 47.1%		7069		10409		
Day Total		902	20			845	58			174	78		
Dook	12.00		06:20		12:00		06:45		12:00		06:20		
Peak	12:00	-	06:30	-	12:00	-	06:15	-	12:00	-	06:30	-	-
Peak Vol. P.H.F.	12:00 699 0.901	-	06:30 612 0.810	-	12:00 601 0.894	-	06:15 544 0.840	-	12:00 1300 0.931	-	06:30 1147 0.817	-	- -

Terminal Area Roadway Arrival Level west of Terminal E Arrival Level Entrance City, State: Boston, MA Client: VHB/ A. Costa



P.O. Box 301 Berlin, MA 01503 Office: 508.481.3999 Fax: 508.545.1234 Email: datarequests@pdillc.com 154582 ATR L Volume Site Code: 13220.00 Date Start: 15-Aug-15

Start		WB Righ	t			WB Left				Comb			18-Aug- 15	
Time	A M	Lane	P.M.		A.M.	Lane			A.M.	eu	P.M.		Tue	
Time 12:00	A.M. 128		59		108		P.M. 82		236		141		rue	
12:15	86		74		63		80		149		154			
12:30	60		71		78		75		138		146			
12:45	104	378	88	292	70	319	116	353	174	697	204	645		
01:00	66	370	68	232	81	313	84	333	147	031	152	045		
01:00	55		80		31		83		86		163			
01:30	47		107		70		113		117		220			
01:45	27	195	94	349	41	223	93	373	68	418	187	722		
02:00	36	195	135	349	40	223	112	3/3	76	410	247	122		
02:00	30		129		48		91		78		220			
02:13	20		116		21		108		41		224			
02:30	44	130	99	479	44	153	71	382	88	283	170	861		
03:00		130	82	479	39	155		302		203	203	001		
03:00	29		87		43		121		68					
03:30	20 10				43 15		88 73		63		175 111			
03.30		cc	38	250		107		255	25	470		640		
03:45	7	66	51	258	10	107	73	355	17	173	124	613		
04:00	13		40 55		8		51 60		21		91 124			
04:15	23		55 91		11		69		34 53		124 104			
04:30	25	00	81	270	28	O.F	113	242	53 70	170	194	604		
04:45	32	93	102	278	38	85	110	343	70 75	178	212	621		
05:00	30		98		45		107		75		205			
05:15	48		121		42		151		90		272			
05:30	57		107		47	0.4.0	115	=00	104	4.4-	222			
05:45	94	229	148	474	84	218	130	503	178	447	278	977		
06:00	77		162		88		142		165		304			
06:15	55		179		92		136		147		315			
06:30	52	004	98	=00	71		81	=0.4	123	004	179	4000		
06:45	80	264	129	568	86	337	142	501	166	601	271	1069		
07:00	46		159		78		134		124		293			
07:15	37		131		52		162		89		293			
07:30	56		152		59		124		115		276			
07:45	52	191	141	583	65	254	102	522	117	445	243	1105		
08:00	71		120		79		107		150		227			
08:15	80		103		73		93		153		196			
08:30	64		86		77		163		141		249			
08:45	61	276	122	431	80	309	196	559	141	585	318	990		
09:00	64		194		92		206		156		400			
09:15	38		180		60		190		98		370			
09:30	69		184		74		170		143		354			
09:45	91	262	136	694	87	313	147	713	178	575	283	1407		
10:00	112		123		78		149		190		272			
10:15	86		102		75		101		161		203			
10:30	118		76		88		115		206		191			
10:45	74	390	104	405	95	336	107	472	169	726	211	877		
11:00	122		154		101		134		223		288			
11:15	124		142		77		139		201		281			
11:30	104		131		45		110		149		241			
11:45	58	408	73	500	62	285	76	459	120	693	149	959		
Total	2882		5311		2939		5535		5821		10846			
Percent	49.5%		49.0%		50.5%		51.0%							
Day Total		819	93			847	74			166	67			
Peak	10:30	_	09:00	-	10:30	_	08:45	_	10:30	_	08:45	-	_	
	438	_	694	_	361	_	762	_	799	_	1442	_		
Vol.	4.30												-	



Curbside Operations Analysis

■ Existing Conditions

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Quick Analysis Tool for Airport Roadways QATAR VO.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Vhunt on 2/4/2016

BOS	2015 Evisting Curb 1	Arrivals	4/2	+	80%	20%	100%	%56
Airport	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor

Proceedings Processing Pr		The second second							
250 347 400 112 400 11	Velilore cidasa	length (feet)	time (minutes)						
250 39 400 112 400 112 400 112 400 112 700 130 700 130 700 130 800 50 800 50 800 50 800 50 800 50 800 60 800 7 700 08 800 80 800	Private Vehicle Pick-Up	25.0	4.7						
400 112 400 122 400 122 400 122 400 122 400 122 400 122 400 122 400 122 400 122 400 123 50 0 2 50 0 2 50 0 3 7 7 8	Taxicabs	25.0	3.9						
400 12 40 12 400	Economy Parking	40.0	1.2						
400 12 400 12 700 50 900 60 900 08 700 08	MPA Employee	40.0	1.2						
700 12 700 15	Water Taxi & Water Ferry	40.0	1.2						
300 513 300 513 300 513 300 513 300 513 300 015 700 018 700 01	Interterminal	40.0	1.2						
300 5.0 40.0 1.5 70.0 0.8 40.0 1.5 50.0 2 30.0 5.0 40.0 1.5 50.0 2 30.0 2.0 40.0 1.5 50.0 2 40.0 1.5 50.0 2 40.0 1.5 50.0 2 40.0 1.5 50.0 1.	Rental Car and MBTA BL	70.07	1.3						
300 5.0 700 0.8 700	Car Service	30.0	2.0						
400 15 700 08 70	Other Shared Ride or Limo	30.0	2.0						
700 0.8 50 2 50 3 7 CW1 Zone 2 Zone 3 Zone 4 Zone 5 Zone 6 CW2 RC&BL CW3 SL CW4 xwalk active xwa	Free Hotel or Other CS	40.0	15.						
So 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	MRTA Silver I ine	20.07	80						
Sone 1 Zone 2 Zone 3 Zone 4 Zone 5 Zone 6 Zone 7		2. 4	3 6						
20ne 1	Logali Expless	96	7 (
Acone 1 Zone 2 Zone 4 Zone 5 Zone 6 Zone 7 Z	ocheduled bus dervice Charter Bus	50	۸ د						
Active CW1 AS CW2 RC&BL CW3 SL CW4 A SL		1	•						
Cone of Langer (China) Cone of Langer (China)<	Assumptions by zone								
Advantage (vph) Tables (vph)	Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zo
Awalk active xwalk	Name	CW1	AS	CW2	RC&BL	CW3	SL	CW4	
adway (vph) 15 15 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 20 20 20 20 20 20 20 20 20 20 20 20	Туре	xwalk	active	xwalk	active	xwalk	active	xwalk	Ø
advay (vph) 15 15 15 15 15 15 15 15 15 15 15 15 15	Curbside frontage (feet)	20	115	20	115	20	115	20	
adway (vph) 15 15 15 15 15 15 15 15 15 15 15 15 15 1	Number of lanes	4	4	4	4	4	4	4	
activity (vph) 130 130 130 130 130 130 130 130 130 130	Number of approach lanes	2	7	2	2	2	2	2	
130 130 130 130 130 130 130 130 130 130	Volume of vehicles using roadway (vph)								
130 130 130 130 130 130 130 130 130 130	Private Vehicle Pick-Up	15	15	15	15	15	15	15	
## Table (vph) ## Table (vph)	Taxicabs	130	130	130	130	130	130	130	
The first of the f	Economy Parking	9	9	9	9	9	9	9	
## Proof of the control of the contr	MPA Employee	9	9	9	9	9	9	9	
15 15 15 15 15 15 15 15 15 15 15 15 15 1	Water Taxi & Water Ferry	5	2	2	2	2	2	2	
15 15 15 15 15 15 15 15 15 15 15 15 15 1	Interterminal	9	9	9	9	9	9	9	
23 23 25 25 25 25 25 25 25 25 25 25 25 25 25	Rental Car and MBTA BL	15	15	15	15	15	15	15	
23 23 23 23 23 23 23 23 23 23 23 23 24 25 25 25 25 25 25 25 25 25 25 25 25 25	Car Service	20	20	20	20	20	20	20	
urbside (vph) urbside (vph) urbside (vph)	Other Shared Ride or Limo	23	23	23	23	23	23	23	
Tribide (vph) Intibide (vph)	Free Hotel or Other CS							,	
mtside (vph) 11	MBTA Silver Line	9	9	9	9	9	9	9	
Tribside (vph) 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Logan Express	7	7	7	7	7	7	7	
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Scheduled Bus Service	က	3	3	3	3	3	3	
urbside (vph) 6 6 7 8 9 15 15 15 15 15 15 15 15 15	Charter Bus	3	က	က	က	က	က	က	
	Volume of vehicles using curbside (vph)								
	Private Vehicle Pick-Up								
φωωω	Taxicabs								
	Economy Parking		9			,			
9	MPA Employee		9						
9	Water Taxi & Water Ferry		2						
£	Interterminal		9						
	Rental Car and MBTA BL				15				
	Car Service						,		
	Other Shared Ride or Limo								
	Free Hotel or Other CS								
Logan Express Scheduled Bus Service Schedule	MBTA Silver Line						9		
Schednled Bus Service	Logan Express						,		
	Scheduled Bus Service								

Zone 11 CharterBus active 50

Frontage and dwell time per curbside operation

Charter Bus

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Vhunt on 2/4/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS
Terminal E
2015 Existing, Curb 1
Arrivals
4 / 2

Cone ID Zone ID <t< th=""><th></th><th>^1 ^1</th><th>^</th><th></th><th>^</th><th></th><th>?</th><th></th><th>?! ?!</th><th></th><th>^ ^</th><th>Ŷ Ŷ</th><th>Ŷ</th></t<>		^1 ^ 1	^		^		?		?! ?!		^ ^	Ŷ Ŷ	Ŷ
CW1 AS CW2 RC8BL CW3 SL CW4 LE CW5 SchBus 20 115 20 115 20 115 20 115 20 75 xwalk active xwalk active xwalk active xwalk active xwalk active xwalk active 75 2,708 2,708 2,708 2,710 2,708<	Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11	
20 115 20 115 20 115 20 115 20 115 20 115 20 115 20 15 20 15 20 20 275 20 275 20 275 20 275 2708 2710 2.708 2.708 2.708	Name/description	CW1	AS	CW2	RC&BL	CW3	SL	CW4	믜	CW5	SchBus	S s	
xwalk active 275 275 275 275 276 2770 2,708 2,710 2,708 2,70 2,70 2,70 2,70 2,70	length (feet)	20	115	20	115	20	115	20	115	20	75	20	
275 275 275 275 275 276 275 276 276 277 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710 2708 2710	Zone type	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active	
2,708 2,720 2,708 2,710 2,708 <td< td=""><td>Roadway volume (vph)</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td>275</td><td></td></td<>	Roadway volume (vph)	275	275	275	275	275	275	275	275	275	275	275	
0.102 0.101 0.102 0.102	Roadway capacity (vph)	2,708	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,710	1,696	
A A A A A A A A A A A A A A A A A A A	Roadway V/C ratio	0.102	0.101	0.102	0.101	0.102	0.101	0.102	0.101	0.102	0.101	0.162	
y 55% of time) N/A 2.0 N/A 1.0 N/A 2.0 N/A 0.500 N/A 0.500 N/A 0.500 N/A A N/A N/	Roadway LOS	∢	۲	∢	∢	∢	∢	A	A	∢	٧	¥	
ne (vehicles) NVA 3.0 NVA 2.0 NVA 0.500 NVA 0.500 NVA 0.500 NVA 0.500 NVA A NVA NV	Curb demand (# in sys 95% of time)	N/A	2.0	N/A	1.0	Α×	1.0	A/A	1.0	A/N	1.0	2.0	
N/A 0.667 N/A 0.500 N/A 0.500 N/A 0.500 N/A 0.500 N/A 0.500 N/A A N/A A N/A A N/A A N/A A A N/A A	capacity per lane (vehicles)	A/N	3.0	A/N	2.0	ΚN	2.0	A/N	2.0	A/N	2.0	1.0	
N/A A N/A A N/A A N/A A	Curb utilization ratic	A/N	0.667	A/N	0.500	Ϋ́	0.500	N/A	0.500	A/A	0.500	2.000	
	SO-	N/A	A	A/N	۷	Υ'N	∢	N/A	۷	A/N	٨	ш	

Level-of-service (LOS) key:

Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Vhunt on 2/4/2016

Ω	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11
Name	CW1	AS	CW2	RC&BL	CW3	SL	CW4	Ш	CW5	SchBus	CharterBus
Type of zone	xwalk	active	active								
Curbside length (feet)	20	115	20	115	20	115	20	115	20	75	20
Number of lanes	4	4	4	4	4	4	4	4	4	4	4
Number of approach lanes	2	2	2	2	2	2	2	2	2	2	2
Roadway volume (vph)	275	275	275	275	275	275	275	275	275	275	275
Curbside demand (vph)		23		15		9		7		3	3
Average dwell time (minutes)		1.20		1.30		0.80		2.10		3.40	7.20
Average vehicle length (feet)		40.00		70.00		70.00		20.00		20.00	20.00
Average vehicle arrival rate (vph)	•	23.00		15.00		00.9		7.00		3.00	3.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Regional adjustment factor	%0.36	%0.26	92.0%	%0.56	95.0%	95.0%	92.0%	92.0%	92.0%	92.0%	92.0%
Through lane roadway capacity	2,850	2,865	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,854	1,786
Adjusted through lane roadway capacity	2,708	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,710	1,696
Estimated roadway V/C ratio	0.102	0.101	0.102	0.101	0.102	0.101	0.102	0.101	0.102	0.101	0.162
Curb capacity per lane (vehicles)		3.00		2.00		2.00		2.00		2.00	1.00
Curb utilization ratio		0.667		0.500		0.500		0.500		0.500	2.000
% occupancy in lane 1		0.660		0.490		0.490		0.490		0.490	1.000
% occupancy in lane 2											0.745
% occupancy in lane 3											0.25
# of cars in curbside lane	,	1.98		0.98		0.98		0.98		0.98	1.00
# of double-parked cars			•								0.75
# of triple-parked cars	,										0.245
Curbside LOS		∢		۷		∢		∢		∢	Ш
Roadway LOS	٧	∢	∢	∢	∢	∢	∢	∢	∢	∢	∢

Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Vhunt on 2/4/2016

BOS Terminal E 2015 Existing, Curb 2 Arrivals 3/2 9 80% 50% 100% 95% Level / type of roadway
Total lanes/ approach lanes
Number of curbside zones
% of 1st lane full when next vehicle double parks
% of zolf ane full when next vehicle triple parks
Crosswalk adjustment factor
Regional adjustment factor Airport Roadway location Scenario

Professe Season Vertice pations Annotes pa								
Py 250 34 7 12	Vehicle class	venicie parking length (feet)	Average awell time (minutes)					
enty 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 12 400 15 50 400 15 60 60 60 60 60 60 60 60 60 60 60 60 60	Private Vehicle Pick-Up	25.0	4.7					
enty 400 12 BL 400 12 BL 500 12 S 700 13 S 700 08 S	Taxicabs	25.0	3.9					
eny 400 12 8LL 700 12 700 13 Lino 300 50 100 08 80 50 80 50 80 50 80 7 80 2 80 80 80 80 80	Economy Parking	40.0	1.2					
Herry 400 12 BL 300 50 Limo 400 12 So 50 Limo 500 50 So 50	MPA Employee	40.0	1.2					
BL	Water Taxi & Water Ferry	40.0	1.2					
BL	Interterminal	40.0	1.2					
Sample	Rental Car and MBTA BL	70.0	1.3					
Limo 500 5.0 S	Car Service	30.0	2.0					
S 70,0 15 70 0.8 70 0.8 70 0.8 70 0.8 70 0.8 70 0.8 70 0.8 70 0.8 71 0.0	Other Shared Ride or Limo	30.0	5.0					
Feb. 500 08 Feb. 500 3 South Come 1 South Come 2 South Come 3 South Come 3 South Come 3 South Come 3 South Come 4 South Come 5 South	Free Hotel or Other CS	40.0	1.5					
Fig. 12 (20ne 1) 2 (20	MBTA Silver Line	70.0	0.8					
Fig. 6. 7. The state of the sta	Logan Express	20	2					
Sone 1 Zone 2 Zone 3 Zone 4 Zone 5 Zone 6	Scheduled Bus Service	20	က					
Sone 1 Sone 2 Sone 3 Sone 4 Sone 5 Sone 6	Charter Bus	90	7					
Sone 1 Zone 2 back Pull Zone 3 back Pull Zone 4 back Pull Zone 5 back Pull Zone 6 back Pull Zone 6 back Pull Zone 6 back Pull Zone 6 back Pull Zone 3 back Pull	Assumptions by zone							
Fundage (feet) financiage (feet	Accompany of the contract of t	70004	7000	7000	7000 4	7000	7	١
Section 20	Zone ID	Zone	Zone Z	Zorie 3	Zorie 4	Corne 5	Zorie o	5 2
Seo 580 580 580 580 580 580 580 580 580 580	Name	Pax PU	<u>-</u>	Lax FO	CWZ:	Tax FO	٥ د ۲	ĭ
190	lype	active	xwalk	active	xwalk	active	xwaik	ac.
5 2 2 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Curbside frontage (reet)	081	70	cL.	020	GL.	0 0	
580 580 580 580 580 580 580 580 580 580	Number of lanes	n (n	n (ກເ	ກເ	n (
580 580 580 580 580 580 580 580 580 580	Number or approach lanes	N	7	N	N	N	N	
580 580 580 580 580 580 580 580 580 580	Volume of vehicles using roadway (vph)							
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Private Vehicle Pick-Up	280	280	280	280	580	580	
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Taxicabs							
83 51 51	Economy Parking							
20 20 20 20 20 20 20 20 20 20 20 20 20 2	MPA Employee							
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Water Taxi & Water Ferry							
20 20 20 20 20 20 20 20 30 30 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Interterminal							
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Rental Car and MBTA BL							
83 61 61 61 61 61 61 61 61 61 61 61 61 61	Car Service							
20 20 20 20 20 20 20 20 20 20 20 20 20 2	Other Shared Ride or Limo						•	
	Free Hotel or Other CS	20	20	20	20	20	20	
	MBTA Silver Line							
	Logan Express							
	Scheduled Bus Service					,		
2	Charter Bus							
	Volume of vehicles using curbside (vph)							
	Private Vehicle Pick-Up	83		51		51		
Economy Parking HAP Employee Water Taxi & Water Ferry Interferminal Interferminal Interferminal Carl Service Other Shared Ride or Limo Chartes Service Organ Express Scheduled Bus Service	Taxicabs							
Water Tank & Water Ferry	Economy Parking						•	
Water Taxi & Water Ferry	MPA Employee							
Interferminal Partial Car and MBTA BL	Water Taxi & Water Ferry							
Rental Car and MBTA BL	Interterminal							
Car Service	Rental Car and MBTA BL		,				,	
Other Shaped Ride or Limo	Car Service							
Free Hotel or Other CS	Other Shared Ride or Limo							
WBTA Silver Line	Free Hotel or Other CS						•	
Ogan Express	MBTA Silver Line							
Scheduled Bus Service	-ogan Express							
Charter Bus	Scheduled Bus Service							
	Charter Bus		,				,	

Zone 8 Zone 9
CW4 CourtesyBus
xwalk active
20 50
3 3
2 2 2

Frontage and dwell time per curbside operation

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Vhunt on 2/4/2016

BOS
Terminal E
2015 Existing, Curb 2
Arrivals
3 / 2
9 Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

↑ ↑ ↑	↑ ↑		^1 ^1				^		^ ^ ·
Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9 CourtesvB
Name/description	Pax PU	CW1	Pax PU	CW2	Pax PU	CW3	Pax PU	CW4	
Curb length (feet)	190	20	115	20	115	20	115	20	
Zone type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	
Roadway volume (vph)	009	009	009	009	009	009	009	009	
Roadway capacity (vph)	1,373	2,657	974	2,657	974	2,657	974	2,657	
Roadway V/C ratio	0.437	0.226	0.616	0.226	0.616	0.226	0.616	0.226	
Roadway LOS	O	۷	۵	4	Ω	∢	О	∢	
Surb demand (# in sys 95% of time)	11.0	N/A	8.0	N/A	8.0	A/A	8.0	A/N	
Curb capacity per lane (vehicles)	8.0	ΑN	5.0	A/N	2.0	N/A	2.0	A/N	
Curb utilization ratic	1.375	ΑN	1.600	A/N	1.600	N/A	1.600	A/N	
SOLITATION	_		c	4/14	(47.14	(2	



Level-of-service (LOS) key:

Quick Analysis Tool for Airport Roadways ATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Vhunt on 2/4/2016

<u>Q</u>	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Name	Pax PU	CW1	Pax PU	CW2	Pax PU	CW3	Pax PU		CourtesyBus
Type of zone	active	xwalk	active	xwalk	active	xwalk	active		active
Curbside length (feet)	190	20	115	20	115	20	115		20
Number of lanes	က	က	က	က	က	က	က		က
Number of approach lanes	2	2	2	2	2	2	2		2
Roadway volume (vph)	009	009	009	009	009	009	009		009
Curbside demand (vph)	83		51	•	51		51		20
Average dwell time (minutes)	4.70		4.70		4.70		4.70		1.50
Average vehicle length (feet)	25.00		25.00	•	25.00		25.00		40.00
Average vehicle arrival rate (vph)	83.00		51.00		51.00		51.00		20.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%		100.0%
Regional adjustment factor	%0'56	%0.36	%0.36	%0.56	%0.56	92.0%	%0.26		92.0%
Through lane roadway capacity	1,446	2,797	1,026	2,797	1,026	2,797	1,026		260
Adjusted through lane roadway capacity	1,373	2,657	974	2,657	974	2,657	974		722
Estimated roadway V/C ratio	0.437	0.226	0.616	0.226	0.616	0.226	0.616		0.832
Curb capacity per lane (vehicles)	8.00		2.00	•	2.00		2.00		1.00
Curb utilization ratio	1.375		1.600	•	1.600		1.600		2.000
% occupancy in lane 1	1.000		1.000		1.000		1.000		1.000
% occupancy in lane 2	0.370		0.545	i	0.545		0.545		0.745
% occupancy in lane 3	•		0.05		0.05		0.05		0.25
# of cars in curbside lane	8.00	•	2.00	•	2.00		2.00		1.00
# of double-parked cars	2.96		2.73	•	2.73		2.73	•	0.75
# of triple-parked cars	•		0.225		0.225		0.225		0.245
Curbside LOS	Ω		۵		۵		Δ		ш
Roadway LOS	O	∢	Ω	∢	Ω	∢	۵	٧	ш

Quick Analysis Tool for Airport Roadways

Summary of Inputs and Assumptions Model run by: Vhunt on 2/4/2016

BOS	Terminal E	2015 Existing	Departures	4/2	_	80%	20%	100%	%96
Airport	Roadway location	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor

Frontage and dwell time per curbside operation		
Vehicle class	Vehicle parking	Average dwe
	length (feet)	time (minutes)
Private Vehicle Drop-Off	25.0	3.4
Rental Car Drop-Off	25.0	3.4
Taxicabs	25.0	2.6
Economy Parking	40.0	1.2
MPA Employee	40.0	1.2
Water Taxi & Water Ferry	40.0	1.2
Interterminal	40.0	1.2
Rental Car and MBTA BL	70.0	0.9
Car Service	30.0	1.4
Other Shared Ride or Limo	30.0	0.0
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	20	_
Logan Express	20	_
Scheduled Bus Service	20	2
Charter Bus	20	2
Assumptions by zone		
Zone ID	Zone 1	
Name	ALL	
Type	active	
Curboido frontas (foot)	100	

Zone 1	ALL	active	635	4	2		259	,	42					20	28	18	20	,	7	80	က		259		42				
Assumptions by zone Zone ID	Name	Type	Curbside frontage (feet)	Number of lanes	Number of approach lanes	Volume of vehicles using roadway (vph)	Private Vehicle Drop-Off	Rental Car Drop-Off	Taxicabs	Economy Parking	MPA Employee	Water Taxi & Water Ferry	Interterminal	Rental Car and MBTA BL	Car Service	Other Shared Ride or Limo	Free Hotel or Other CS	MBTA Silver Line	Logan Express	Scheduled Bus Service	Charter Bus	Volume of vehicles using curbside (vph)	Private Vehicle Drop-Off	Rental Car Drop-Off	Taxicabs	Economy Parking	MPA Employee	Water Taxi & Water Ferry	Interterminal

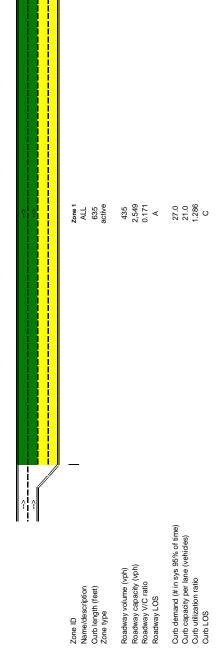
Charter Bus	ဧ
Volume of vehicles using curbside (vph)	
Private Vehicle Drop-Off	259
Rental Car Drop-Off	
Taxicabs	42
Economy Parking	
MPA Employee	
Water Taxi & Water Ferry	
Interterminal	
Rental Car and MBTA BL	20
Car Service	28
Other Shared Ride or Limo	18
Free Hotel or Other CS	20
MBTA Silver Line	
Logan Express	7
Scheduled Bus Service	80
Charter Bus	c

Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Vhunt on 2/4/2016

Airport
Roadway location Termi
Scenario 2015
Level / type of roadway Depart
Total lanes / approach lanes
Number of curbside zones 1







Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Vhunt on 2/4/2016

Zone 1	ALL	active	635	4	2	435	435	2.72	29.67	435.00	100.0%	%0'56	2,685	acity 2,549	0.171	21.00	1.286	1.000	0.280		21.00	5.88	i	O	
Q	Name	Type of zone	Curbside length (feet)	Number of lanes	Number of approach lanes	Roadway volume (vph)	Curbside demand (vph)	Average dwell time (minutes)	Average vehicle length (feet)	Average vehicle arrival rate (vph)	Crosswalk adjustment factor	Regional adjustment factor	Through lane roadway capacity	Adjusted through lane roadway capacity	Estimated roadway V/C ratio	Curb capacity per lane (vehicles)	Curb utilization ratio	% occupancy in lane 1	% occupancy in lane 2	% occupancy in lane 3	# of cars in curbside lane	# of double-parked cars	# of triple-parked cars	Curbside LOS	SO Lyenhood

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Roadway Merge, Diverge, and Weave Analysis

■ Existing Conditions

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Diverge_1

Departure Level Entrance from TAR

Scenario: Existing

D	8	
	024	
V ₁₂	824	
v_R	586	
V_{F}	824	
f_{hvR}	0.94	
f_{hvF}	0.98	
f_p	0.85 From	HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.90	
PHF_F	0.82	

Knowns:

HV%	0.12	HV%	0.05	
E_T	1.5	E _T	1.5	
V_R	424	V_{F}	562	
V_{existing}	437	V_{existing}	668	
V_{P15}	121	V_{P15}	203	
L_D	330			

P_{FD} 1 From Table 13-7 HCM 2010

Departure Exit from Curbside to TWT or Service Rd/SCT/Rt1A Scenario: Existing

U	5	
V ₁₂	#DIV/0!	
\mathbf{v}_{R}	#DIV/0!	
V_{F}	626	
f_{hvR}	1.00	
f_{hvF}	0.92	

 f_p 0.85 From HCM 2010 Text/Table, unfamiliar drivers

 PHF_R #DIV/0! PHF_F 0.86

Knowns:

HV%		HV%	0.18	
E_T		E _T	1.5	
V_R		V_{F}	419	
V_{existing}		V_{existing}	305	
V_{P15}		V_{P15}	89	
L_D	70			
P_{FD}	1	From Table	13-7 HCM	2010
N	2			

Departure Exit Ramp to service Rd or SCT/RT1A

Scenario: Existing

D	4
V ₁₂	#DIV/0!
\mathbf{v}_{R}	#DIV/0!
V_{F}	410

 $\begin{array}{ll} f_{hvR} & 1.00 \\ f_{hvF} & 0.92 \end{array}$

 f_p 0.85 From HCM 2010 Text/Table, unfamiliar drivers

 $\begin{array}{ll} \mathsf{PHF}_\mathsf{R} & \mathsf{\#DIV/0!} \\ \mathsf{PHF}_\mathsf{F} & 0.90 \end{array}$

HV%		HV%	0.18	
E_T		E_T	1.5	
V_R		V_{F}	287	
V_{existing}		V_{existing}	194	
V_{P15}		V_{P15}	54	
L_D	85			
P_{FD}	1	From Table	13-7 HCM	2010
N	2			

Diverge_5

Arrival Entrance Ramp from TAR

Scenario: Existing

D	14
V	1405
V ₁₂	1485
v_R	614
V_{F}	1485
f_{hvR}	0.97
$f_{h\nu F}$	0.99
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.91
PHF_F	0.92

Knowns:

HV%	0.06	HV%	0.02
E_T	1.5	E _T	1.5
V_R	460	V_{F}	1150
V_{existing}	483	V_{existing}	1215
V_{P15}	133	V_{P15}	330
Ln	330		

 P_{FD} 1 From Table 13-7 HCM 2010

Arrival Curbside Exit to Service Rd or TWT/SCT/RT1A

Scenario: Existing

D	30
v_t	1565
V_{FF}	173
V_{FR}	425
V_{RF}	145
V_{RR}	822
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.95 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09	
E_T	1.5	
V_{FF}	133	See Diagram with Hand Calcs
V_{FR}	327	
V_{RF}	112	
V_{RR}	633	
N	2	
S	26	
V_{existing}	621	
V_{P15}	164	

Departure Leve Between Terminal C and E

Scenario: Existing

D	16
\mathbf{v}_{t}	1408
V_{FF}	440
\mathbf{v}_{FR}	538
\mathbf{v}_{RF}	356
\mathbf{v}_{RR}	74
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.85 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09
E_T	1.5
V_{FF}	305
V_{FR}	373
V_{RF}	247
V_{RR}	51
N	3
S	28
V_{existing}	1105
V_{P15}	324

Departure Leve Between Terminal C and E

Scenario: Existing

D	31
\mathbf{v}_{t}	2016
\mathbf{v}_{FF}	859
\mathbf{v}_{FR}	547
\mathbf{v}_{RF}	581
\mathbf{v}_{RR}	29
f_{hv}	0.98

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.96 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.04
E_T	1.5
V_{FF}	686
V_{FR}	437
V_{RF}	464
V_{RR}	23
N	3
S	22
V_{existing}	1698
V_{P15}	443

Departure Exit Ramp to TWT Exit Ramp

Scenario: Existing

D	15
V ₁₂	799
v _R	526
V_{F}	799
f_{hvR}	0.99
f_{hvF}	0.96
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.76
PHF_F	0.95

Knowns:

0.02	HV%	0.09	
1.5	E _T	1.5	
338	V_{F}	614	
110	V_{existing}	620	
36	V_{P15}	164	
165			
	1.5 338 110 36	0.02 HV% 1.5 E _T 338 V _F 110 V _{existing} 36 V _{P15} 165	1.5 E _T 1.5 338 V _F 614 110 V _{existing} 620 36 V _{P15} 164

P_{FD} 1 From Table 13-7 HCM 2010

Departure Exit Ramp to TWT Exit Ramp

Scenario: Existing

D	12
V ₁₂	584
v _R	293
V_{F}	584
f_{hvR}	0.84
f_{hvF}	0.96
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.72
PHF_F	0.95

Knowns:

HV%	0.39	HV%	0.09	
E_T	1.5	E _T	1.5	
V_R	150	V_{F}	450	
V_{existing}	158	V_{existing}	621	
V_{P15}	55	V_{P15}	164	
L_A	0			
n		Cara ar Talala	42 7 1100 4	20.

1 From Table 13-7 HCM 2010 P_{FD}

Departure Exit Ramp to TWT Exit Ramp Scenario: Existing

D	30	
	2246	
V_{12}	2316	
\mathbf{v}_{R}	1076	
\mathbf{V}_{F}	2316	
$f_{h\nu R}$	0.84	
f_{hvF}	0.99	
f_p	0.85	From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.95	
PHF_F	0.92	

Knowns:

HV%	0.39	HV%	0.02	
E_T	1.5	E _T	1.5	
V_R	729	V_{F}	1794	
V_{existing}	731	V_{existing}	1215	
V_{P15}	192	V_{P15}	330	
L_A	175			

P_{FD} 1 From Table 13-7 HCM 2010

	>	-	-	~	←	*_	\	×	4	•	*	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					ĵ.					*	4	
Volume (vph)	0	0	0	0	85	75	0	0	0	565	210	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1079	0	0	0	0	1681	1729	0
Flt Permitted										0.950	0.977	
Satd. Flow (perm)	0	0	0	0	1079	0	0	0	0	1681	1729	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		474			518			525			453	
Travel Time (s)		10.8			11.8			11.9			10.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.62	0.62	0.62	0.92	0.92	0.92	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	65%	65%	65%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)										32%		
Lane Group Flow (vph)	0	0	0	0	258	0	0	0	0	422	430	0
Sign Control		Stop			Stop			Stop			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utiliza	ition 36.9%			IC	U Level o	Service A	١					
Analysis Period (min) 15												

t Delay, s/veh	3.2												
t Delay, Siveri	3.2												
lovement	El	BL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
ol, veh/h		0	0	0	0	85	75	0	0	0	565	210	0
onflicting Peds, #/hr		0	0	0	0	0	0	0	0	0	0	0	0
ign Control	St	top	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
T Channelized		-	-	None	-	-	None	-	-	None	-	-	None
orage Length		-	-	-	-		-	-			0		-
eh in Median Storage, #		-	0	-	-	0	-	-	0	-	-	0	-
rade, %		-	0		-	0		-	0		-	0	
eak Hour Factor		92	92	92	62	62	62	92	92	92	91	91	91
eavy Vehicles, %		2	2	2	65	65	65	2	2	2	2	2	2
vmt Flow		0	0	0	0	137	121	0	0	0	621	231	0
11111											02.	201	
lajor/Minor					Minor2						Major2		
onflicting Flow All					1473	1473	231				0	0	0
Stage 1					1473	1473	-				-	-	-
Stage 2					0	0	-				-	-	-
itical Hdwy					7.75	7.15	6.85				-	-	-
ritical Hdwy Stg 1					6.75	6.15	-				-	-	-
ritical Hdwy Stg 2					-	-	-				-	-	-
ollow-up Hdwy					4.085	4.585	3.885				-	-	-
ot Cap-1 Maneuver					76	~ 93	675				-	-	-
Stage 1					115	140	-				-	-	-
Stage 2					-	-	-				-	-	-
atoon blocked, %												-	-
ov Cap-1 Maneuver					76	0	675				-	-	-
ov Cap-2 Maneuver					76	0	-				-	-	-
Stage 1					115	0	-				-	-	-
Stage 2					-	0	-				-	-	-
proach					WB						NW		
CM Control Delay, s					13.6						1444		
CM LOS					13.0 B								
CIWI EOS					В								
linor Lane/Major Mvmt	NIV	NL	NWT	NWR	WBLn1								
apacity (veh/h)	INV	/VL	- 14441	INVVIX	675								
CM Lane V/C Ratio		-	-	-	0.382								
					13.6								
CM Control Delay (s)		-	-	-									
CM Lane LOS CM 95th %tile Q(veh)		-	-	-	B 1.8								
			-	-	ıκ								

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

Intersection Capacity Analyses

■ Existing Conditions

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Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2			
Lane Configurations	ሻ	^	∱ }		ሻ	∱ 1≽		ሻ			
Volume (vph)	92	221	167	82	156	254	21	39			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width	11	12	12	12	11	12	12	13			
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0		4.0			
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95		1.00			
Frt	1.00	1.00	0.95		1.00	0.99		1.00			
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95			
Satd. Flow (prot)	1711	3471	2972		1711	3498		933			
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95			
Satd. Flow (perm)	1711	3471	2972		1711	3498		933			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	100	240	182	89	170	276	23	42			
RTOR Reduction (vph)	0	0	50	0	0	9	0	0			
Lane Group Flow (vph)	100	240	221	0	170	290	0	42			
Heavy Vehicles (%)	2%	4%	4%	39%	2%	2%	2%	100%			
Turn Type	Prot	NA	NA		Prot	NA		Prot			
Protected Phases	1	6	2		3	8		4			
Permitted Phases											
Actuated Green, G (s)	7.3	46.7	33.4		11.5	21.3		4.8			
Effective Green, g (s)	9.3	48.7	35.4		13.5	23.3		6.8			
Actuated g/C Ratio	0.12	0.61	0.44		0.17	0.29		0.08			
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0			
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0			
Lane Grp Cap (vph)	198	2112	1315		288	1018		79			
v/s Ratio Prot	c0.06	0.07	c0.07		c0.10	0.08		c0.05			
v/s Ratio Perm											
v/c Ratio	0.51	0.11	0.17		0.59	0.29		0.53			
Uniform Delay, d1	33.2	6.6	13.4		30.7	21.9		35.1			
Progression Factor	1.19	0.82	0.99		0.96	0.95		1.00			
Incremental Delay, d2	0.6	0.1	0.3		3.2	0.2		6.7			
Delay (s)	40.1	5.5	13.5		32.7	20.9		41.8			
Level of Service	D	Α	В		С	С		D			
Approach Delay (s)		15.7	13.5			25.2					
Approach LOS		В	В			С					
Intersection Summary											
HCM 2000 Control Delay			20.1	H	CM 2000	Level of S	Service		С		
HCM 2000 Volume to Capac	ity ratio		0.34								
Actuated Cycle Length (s)			80.0		um of lost				15.0		
Intersection Capacity Utilizat	ion		38.7%	IC	U Level o	of Service			Α		
Analysis Period (min)			15								
c Critical Lane Group											

HCM Signalized Intersection Capacity Analysis 2/1/2016

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		7	f)			4	
Volume (vph)	7	13	85	30	6	37	92	121	22	21	102	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			3.0		6.0	6.0			6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.89			0.93		1.00	0.98			0.99	
Flt Protected		1.00			0.98		0.95	1.00			0.99	
Satd. Flow (prot)		1043			1471		902	1615			1168	
Flt Permitted		0.97			0.89		0.66	1.00			0.95	
Satd. Flow (perm)		1019			1338		629	1615			1120	
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)	8	14	92	33	7	40	100	132	24	23	111	16
RTOR Reduction (vph)	0	82	0	0	34	0	0	5	0	0	3	0
Lane Group Flow (vph)	0	32	0	0	46	0	100	151	0	0	147	0
Heavy Vehicles (%)	50%	100%	57%	20%	100%	2%	100%	14%	20%	2%	65%	100%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		6.9			8.9		41.7	41.7			41.7	
Effective Green, g (s)		7.9			9.9		42.7	42.7			42.7	
Actuated g/C Ratio		0.11			0.14		0.61	0.61			0.61	
Clearance Time (s)		6.0			4.0		7.0	7.0			7.0	
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0	
Lane Grp Cap (vph)		115			189		383	985			683	
v/s Ratio Prot								0.09				
v/s Ratio Perm		0.03			c0.03		c0.16				0.13	
v/c Ratio		0.28			0.24		0.26	0.15			0.22	
Uniform Delay, d1		28.4			26.7		6.3	5.9			6.1	
Progression Factor		1.00			1.00		0.61	0.56			1.00	
Incremental Delay, d2		0.5			0.7		1.6	0.3			0.7	
Delay (s)		28.9			27.4		5.5	3.6			6.8	
Level of Service		С			С		Α	Α			Α	
Approach Delay (s)		28.9			27.4			4.4			6.8	
Approach LOS		С			С			Α			Α	
Intersection Summary												
HCM 2000 Control Delay			12.7	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	y ratio		0.25									
Actuated Cycle Length (s)			70.0		um of lost				15.0			
Intersection Capacity Utilizatio	n		39.4%	IC	CU Level o	of Service	:		Α			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	
Lane Configurations	^	7	4	1/1	Ž.			ፈተኩ		
Volume (vph)	95	83	6	218	7	98	4	230	145	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	12	11	12	13	12	12	11	
Total Lost time (s)	6.0	6.0	6.0	5.0	5.0			5.0		
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.91		
Frt	1.00	0.85	1.00	1.00	0.85			0.94		
Flt Protected	1.00	1.00	1.00	0.95	1.00			1.00		
Satd. Flow (prot)	3282	1487	1776	3164	1286			4377		
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00		
Satd. Flow (perm)	3282	1487	1776	3164	1286			4377		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	103	90	7	237	8	107	4	250	158	
RTOR Reduction (vph)	0	36	0	0	58	0	0	139	0	
Lane Group Flow (vph)	103	54	7	237	57	0	0	273	0	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Turn Type	NA	Perm	NA	Prot	Prot		Split	NA		
Protected Phases	4		8	2	2		3	3		
Permitted Phases		4		2	2					
Actuated Green, G (s)	5.4	5.4	5.4	29.4	29.4			7.8		
Effective Green, g (s)	7.4	7.4	7.4	31.4	31.4			9.8		
Actuated g/C Ratio	0.09	0.09	0.09	0.39	0.39			0.12		
Clearance Time (s)	8.0	8.0	8.0	7.0	7.0			7.0		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	303	137	164	1241	504			536		
v/s Ratio Prot	0.03		0.00	c0.07	0.04			c0.06		
v/s Ratio Perm		c0.04								
v/c Ratio	0.34	0.39	0.04	0.19	0.11			0.51		
Uniform Delay, d1	34.0	34.2	33.1	16.0	15.5			32.9		
Progression Factor	0.99	0.99	1.00	0.92	0.99			1.00		
Incremental Delay, d2	0.2	0.7	0.0	0.3	0.4			0.3		
Delay (s)	34.0	34.5	33.1	15.0	15.7			33.1		
Level of Service	С	С	С	В	В			С		
Approach Delay (s)	34.3		33.1					33.1		
Approach LOS	С		С					С		
Intersection Summary										
HCM 2000 Control Delay			26.8	Н	CM 2000	Level of S	Service		С	
HCM 2000 Volume to Capaci	ty ratio		0.23							
Actuated Cycle Length (s)			80.0		um of los				19.0	
Intersection Capacity Utilization	on		32.8%	IC	U Level	of Service			Α	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis 2/1/2016

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	*	ħ₽			€î∌						41	7
Volume (vph)	72	113	97	1	62	61	0	0	0	152	178	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00
Frt	1.00	0.93			0.93						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.98	1.00
Satd. Flow (prot)	1770	2994			2462						3199	1583
Flt Permitted	0.95	1.00			0.95						0.98	1.00
Satd. Flow (perm)	1770	2994			2348						3199	1583
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)	78	123	105	1	67	66	0	0	0	165	193	186
RTOR Reduction (vph)	0	27	0	0	41	0	0	0	0	0	0	131
Lane Group Flow (vph)	78	201	0	0	93	0	0	0	0	0	358	55
Heavy Vehicles (%)	2%	21%	2%	2%	38%	34%	2%	2%	2%	20%	2%	2%
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov
Protected Phases	1	6			2					4	4	1
Permitted Phases				2								4
Actuated Green, G (s)	7.7	42.4			27.7						12.0	19.7
Effective Green, g (s)	9.7	44.4			29.7						14.0	23.7
Actuated g/C Ratio	0.12	0.55			0.37						0.18	0.30
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0
Lane Grp Cap (vph)	214	1661			871						559	468
v/s Ratio Prot	c0.04	c0.07									c0.11	0.01
v/s Ratio Perm					0.04							0.02
v/c Ratio	0.36	0.12			0.11						0.64	0.12
Uniform Delay, d1	32.3	8.5			16.5						30.7	20.5
Progression Factor	1.13	1.08			1.00						1.00	1.00
Incremental Delay, d2	0.4	0.1			0.2						1.9	0.0
Delay (s)	37.0	9.3			16.7						32.5	20.6
Level of Service	D	Α			В						С	С
Approach Delay (s)		16.4			16.7			0.0			28.4	
Approach LOS		В			В			А			С	
Intersection Summary												
HCM 2000 Control Delay			23.1	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capac	city ratio		0.26									
Actuated Cycle Length (s)			80.0		um of lost				17.0			
Intersection Capacity Utilizat	tion		37.7%	IC	U Level c	of Service			Α			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	۲		7	¥	f)		¥	†			f)	
Volume (vph)	71	0	102	77	121	11	155	97	0	0	200	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.5	5.0	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.99		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1770		1583	1671	1830		1770	1597			1584	
Flt Permitted	0.67		1.00	0.95	1.00		0.44	1.00			1.00	
Satd. Flow (perm)	1239		1583	1671	1830		825	1597			1584	
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)	77	0	111	84	132	12	168	105	0	0	217	7
RTOR Reduction (vph)	0	0	81	0	3	0	0	0	0	0	1	0
Lane Group Flow (vph)	77	0	30	84	141	0	168	105	0	0	223	0
Heavy Vehicles (%)	2%	2%	2%	8%	2%	8%	2%	19%	0%	0%	20%	2%
Turn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA	
Protected Phases			3 9	1	6		3 9	8			4	
Permitted Phases	2		2	6			8					
Actuated Green, G (s)	6.3		16.7	17.6	17.6		32.4	27.3			16.5	
Effective Green, g (s)	7.3		16.7	18.6	18.6		31.4	28.3			17.5	
Actuated g/C Ratio	0.12		0.27	0.30	0.30		0.51	0.46			0.28	
Clearance Time (s)	6.0			6.0	6.0			5.5			5.5	
Vehicle Extension (s)	2.0			2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	147		429	505	553		565	734			450	
v/s Ratio Prot			0.01	0.02	c0.08		c0.05	0.07			c0.14	
v/s Ratio Perm	c0.06		0.01	0.03			0.11					
v/c Ratio	0.52		0.07	0.17	0.26		0.30	0.14			0.50	
Uniform Delay, d1	25.5		16.6	15.8	16.2		8.5	9.6			18.3	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	1.6		0.0	0.1	0.1		0.1	0.0			0.3	
Delay (s)	27.0		16.7	15.8	16.3		8.6	9.6			18.6	
Level of Service	С		В	В	В		Α	Α			В	
Approach Delay (s)		20.9			16.1			9.0			18.6	
Approach LOS		С			В			А			В	
Intersection Summary												
HCM 2000 Control Delay			15.6	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capa	acity ratio		0.45									
Actuated Cycle Length (s)	,		61.5	S	um of lost	time (s)			22.0			
Intersection Capacity Utiliz	ation		45.4%		CU Level o		9		Α			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	Ţ		7		∱ β			4₽	
Volume (vph)	149	28	406	88	0	51	0	52	59	53	326	0
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		4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95	
Frt		1.00	0.85	1.00		0.85		0.92			1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99	
Satd. Flow (prot)		1549	1468	1480		1369		2768			3064	
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.89	
Satd. Flow (perm)		1549	1468	1480		1369		2768			2760	
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)	162	30	441	96	0	55	0	57	64	58	354	0
RTOR Reduction (vph)	0	0	333	0	0	47	0	44	0	0	0	0
Lane Group Flow (vph)	0	192	108	96	0	8	0	77	0	0	412	0
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA	
Protected Phases	4	4	4	3		3		1			1	
Permitted Phases										1		
Actuated Green, G (s)		11.9	11.9	6.4		6.4		14.1			14.1	
Effective Green, g (s)		12.9	12.9	7.4		7.4		16.1			16.1	
Actuated g/C Ratio		0.24	0.24	0.14		0.14		0.30			0.30	
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0	
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0	
Lane Grp Cap (vph)		378	358	207		191		844			841	
v/s Ratio Prot		c0.12	0.07	c0.06		0.01		0.03				
v/s Ratio Perm											c0.15	
v/c Ratio		0.51	0.30	0.46		0.04		0.09			0.49	
Uniform Delay, d1		17.2	16.3	20.9		19.6		13.1			15.0	
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00	
Incremental Delay, d2		0.4	0.2	0.6		0.0		0.0			0.5	
Delay (s)		17.6	16.4	21.5		19.7		13.2			15.4	
Level of Service		В	В	С		В		В			В	
Approach Delay (s)		16.8			20.8			13.2			15.4	
Approach LOS		В			С			В			В	
Intersection Summary												
HCM 2000 Control Delay			16.5	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capac	ity ratio		0.46									
Actuated Cycle Length (s)			52.8	S	um of lost	time (s)			14.0			
Intersection Capacity Utilizat	ion		50.6%		CU Level o				А			
Analysis Period (min)			15									
0 111 11												

c Critical Lane Group

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			†	↑		
Volume (vph)	52	47	0	175	217	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0			4.0	4.0		
Lane Util. Factor	1.00			1.00	1.00		
Frt	0.94			1.00	1.00		
Flt Protected	0.97			1.00	1.00		
Satd. Flow (prot)	1583			1583	1652		
Flt Permitted	0.97			1.00	1.00		
Satd. Flow (perm)	1583			1583	1652		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	57	51	0	190	236	0	
RTOR Reduction (vph)	45	0	0	0	0	0	
Lane Group Flow (vph)	63	0	0	190	236	0	
Heavy Vehicles (%)	18%	0%	0%	20%	15%	0%	
Turn Type	Prot			NA	NA		
Protected Phases	3			1	1		
Permitted Phases							
Actuated Green, G (s)	7.2			46.6	46.6		
Effective Green, g (s)	8.2			47.6	47.6		
Actuated g/C Ratio	0.12			0.68	0.68		
Clearance Time (s)	5.0			5.0	5.0		
Vehicle Extension (s)	2.0			2.0	2.0		
Lane Grp Cap (vph)	185			1076	1123		
v/s Ratio Prot	c0.04			0.12	c0.14		
v/s Ratio Perm							
v/c Ratio	0.34			0.18	0.21		
Uniform Delay, d1	28.4			4.1	4.2		
Progression Factor	1.00			1.00	0.60		
Incremental Delay, d2	0.4			0.4	0.4		
Delay (s)	28.8			4.4	2.9		
Level of Service	С			Α	Α		
Approach Delay (s)	28.8			4.4	2.9		
Approach LOS	С			А	Α		
Intersection Summary							
HCM 2000 Control Delay			8.7	Н	CM 2000	Level of Service	А
HCM 2000 Volume to Cap	acity ratio		0.22				
Actuated Cycle Length (s)	. ,		70.0	S	um of lost	time (s)	11.0
Intersection Capacity Utiliz	ation		24.8%		CU Level c		Α
Analysis Period (min)			15				
a Critical Lana Croup							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	44			4₽	ħβ		
Volume (vph)	24	3	5	90	27	26	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0			4.0	4.0		
Lane Util. Factor	0.97			0.95	0.95		
Frt	0.98			1.00	0.93		
Flt Protected	0.96			1.00	1.00		
Satd. Flow (prot)	3405			3531	3278		
Flt Permitted	0.96			0.94	1.00		
Satd. Flow (perm)	3405			3325	3278		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	26	3	5	98	29	28	
RTOR Reduction (vph)	2	0	0	0	23	0	
Lane Group Flow (vph)	27	0	0	103	34	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			6	2		
Permitted Phases			6				
Actuated Green, G (s)	1.5			1.5	1.5		
Effective Green, g (s)	2.5			2.5	2.5		
Actuated g/C Ratio	0.19			0.19	0.19		
Clearance Time (s)	5.0			5.0	5.0		
Vehicle Extension (s)	3.0			2.0	2.0		
Lane Grp Cap (vph)	654			639	630		
v/s Ratio Prot	c0.01				0.01		
v/s Ratio Perm				c0.03			
v/c Ratio	0.04			0.16	0.05		
Uniform Delay, d1	4.3			4.4	4.3		
Progression Factor	1.00			1.00	1.00		
Incremental Delay, d2	0.0			0.0	0.0		
Delay (s)	4.3			4.4	4.3		
Level of Service	Α			Α	Α		
Approach Delay (s)	4.3			4.4	4.3		
Approach LOS	Α			Α	Α		
Intersection Summary							
HCM 2000 Control Delay			4.4	H(CM 2000	Level of Service	
HCM 2000 Volume to Capac	city ratio		0.10				
Actuated Cycle Length (s)			13.0		ım of lost		
Intersection Capacity Utiliza	tion		25.4%	IC	U Level c	of Service	
Analysis Period (min)			15				
c Critical Lane Group							

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Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	ሻ	7	ĵ»			र्स
Volume (veh/h)	51	41	134	98	34	230
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	55	45	146	107	37	250
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						410
pX, platoon unblocked	0.98					
vC, conflicting volume	523	199			252	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	503	199			252	
tC, single (s)	6.8	6.4			4.4	
tC, 2 stage (s)						
tF (s)	3.9	3.5			2.5	
p0 queue free %	87	94			97	
cM capacity (veh/h)	436	789			1171	
Direction, Lane #	NW 1	NE 1	SW 1			
Volume Total	100	252	287			
Volume Left	55	0	37			
Volume Right	45	107	0			
cSH	786	1700	1171			
Volume to Capacity	0.13	0.15	0.03			
Queue Length 95th (ft)	11	0	2			
Control Delay (s)	12.4	0.0	1.3			
Lane LOS	В		Α			
Approach Delay (s)	12.4	0.0	1.3			
Approach LOS	В					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utiliza	ation		40.4%	IC	CU Level o	of Service
Analysis Period (min)			15			
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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		1>			414
Volume (veh/h)	28	1	241	41	0	145
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	1	262	45	0	158
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	363	284			307	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	249	162			187	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	100			100	
cM capacity (veh/h)	653	776			1259	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	32	307	53	105		
Volume Left	30	0	0	0		
Volume Right	1	45	0	0		
cSH	656	1700	1259	1700		
Volume to Capacity	0.05	0.18	0.00	0.06		
Queue Length 95th (ft)	4	0	0	0		
Control Delay (s)	10.8	0.0	0.0	0.0		
Lane LOS	В					
Approach Delay (s)	10.8	0.0	0.0			
Approach LOS	В					
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utiliza	ation		25.2%	IC	U Level c	of Service
Analysis Period (min)			15			

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Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2		
Lane Configurations	ሻ	† †	∱ }		ሻ	ħβ		ሻ		
Volume (vph)	78	482	343	109	521	782	28	39		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	11	12	12	12	11	12	12	13		
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0		4.0		
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95		1.00		
Frt	1.00	1.00	0.96		1.00	0.99		1.00		
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95		
Satd. Flow (prot)	1662	3505	3241		1728	3556		933		
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95		
Satd. Flow (perm)	1662	3505	3241		1728	3556		933		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	85	524	373	118	566	850	30	42		
RTOR Reduction (vph)	0	0	34	0	0	3	0	0		
Lane Group Flow (vph)	85	524	457	0	566	877	0	42		
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%		
Turn Type	Prot	NA	NA		Prot	NA		Prot		
Protected Phases	1	6	2		3	8		4		
Permitted Phases										
Actuated Green, G (s)	7.3	39.6	26.3		26.4	38.4		7.0		
Effective Green, g (s)	9.3	41.6	28.3		28.4	40.4		9.0		
Actuated g/C Ratio	0.10	0.46	0.31		0.32	0.45		0.10		
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0		
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	171	1620	1019		545	1596		93		
v/s Ratio Prot	c0.05	0.15	c0.14		c0.33	c0.25		0.05		
v/s Ratio Perm										
v/c Ratio	0.50	0.32	0.45		1.04	0.55		0.45		
Uniform Delay, d1	38.1	15.3	24.6		30.8	18.1		38.2		
Progression Factor	1.24	0.90	1.01		1.02	1.02		1.00		
Incremental Delay, d2	0.6	0.4	1.4		48.9	0.4		3.5		
Delay (s)	47.7	14.1	26.3		80.2	18.9		41.6		
Level of Service	D	В	С		F	В		D		
Approach Delay (s)		18.8	26.3			42.9				
Approach LOS		В	С			D				
Intersection Summary										
HCM 2000 Control Delay			34.0	H	CM 2000	Level of S	Service		С	
HCM 2000 Volume to Capa	city ratio		0.70							
Actuated Cycle Length (s)			90.0		um of los				15.0	
Intersection Capacity Utiliza	ition		63.5%	IC	CU Level	of Service			В	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis 2/1/2016

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		ሻ	ĵ»			4	
Volume (vph)	0	0	99	45	0	39	193	344	26	15	49	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.86			0.94		1.00	0.99			0.97	
Flt Protected		1.00			0.97		0.95	1.00			0.99	
Satd. Flow (prot)		822			1446		902	1827			1385	
Flt Permitted		1.00			0.77		0.70	1.00			0.92	
Satd. Flow (perm)		822			1149		662	1827			1291	
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	108	49	0	42	210	374	28	16	53	24
RTOR Reduction (vph)	0	99	0	0	83	0	0	1	0	0	7	0
Lane Group Flow (vph)	0	9	0	0	8	0	210	401	0	0	86	0
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		5.7			5.7		52.9	52.9			52.9	
Effective Green, g (s)		6.7			6.7		53.9	53.9			53.9	
Actuated g/C Ratio		0.08			0.08		0.67	0.67			0.67	
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0	
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0	
Lane Grp Cap (vph)		68			96		446	1230			869	
v/s Ratio Prot		c0.01						0.22				
v/s Ratio Perm					0.01		c0.32				0.07	
v/c Ratio		0.13			0.08		0.47	0.33			0.10	
Uniform Delay, d1		34.0			33.8		6.2	5.5			4.6	
Progression Factor		1.00			1.00		0.76	0.74			1.00	
Incremental Delay, d2		0.3			0.4		3.3	0.7			0.2	
Delay (s)		34.3			34.2		8.0	4.7			4.8	
Level of Service		С			С		Α	Α			Α	
Approach Delay (s)		34.3			34.2			5.8			4.8	
Approach LOS		С			С			А			А	
Intersection Summary												
HCM 2000 Control Delay			12.0	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	ratio		0.40									
Actuated Cycle Length (s)			80.0	S	um of lost	time (s)			15.0			
Intersection Capacity Utilization	1		40.4%		CU Level o				А			
Analysis Period (min)			15									

c Critical Lane Group

Timing Plan: PM Peak

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Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	
Lane Configurations	^	7	4	77	Ž.			ፈተሱ		
Volume (vph)	357	215	6	559	30	275	15	345	357	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	12	11	12	13	12	12	11	
Total Lost time (s)	6.0	6.0	6.0	5.0	5.0			5.0		
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.91		
Frt	1.00	0.85	1.00	1.00	0.85			0.93		
Flt Protected	1.00	1.00	1.00	0.95	1.00			1.00		
Satd. Flow (prot)	3282	1487	1776	3164	1262			4326		
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00		
Satd. Flow (perm)	3282	1487	1776	3164	1262			4326		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	388	234	7	608	33	299	16	375	388	
RTOR Reduction (vph)	0	32	0	0	71	0	0	204	0	
Lane Group Flow (vph)	388	202	7	608	261	0	0	575	0	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Turn Type	NA	Perm	NA	Prot	Prot		Split	NA		
Protected Phases	4		8	2	2		3	3		
Permitted Phases		4		2	2					
Actuated Green, G (s)	16.7	16.7	16.7	20.9	20.9			15.0		
Effective Green, g (s)	18.7	18.7	18.7	22.9	22.9			17.0		
Actuated g/C Ratio	0.21	0.21	0.21	0.25	0.25			0.19		
Clearance Time (s)	8.0	8.0	8.0	7.0	7.0			7.0		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	681	308	369	805	321			817		
v/s Ratio Prot	0.12		0.00	0.19	c0.21			c0.13		
v/s Ratio Perm		c0.14								
v/c Ratio	0.57	0.66	0.02	0.76	0.81			0.70		
Uniform Delay, d1	32.0	32.7	28.4	31.0	31.5			34.1		
Progression Factor	1.00	1.00	1.00	0.86	0.79			0.81		
Incremental Delay, d2	0.7	3.8	0.0	4.1	13.1			2.3		
Delay (s)	32.7	36.5	28.4	30.7	38.1			29.9		
Level of Service	С	D	С	С	D			С		
Approach Delay (s)	34.1		28.4					29.9		
Approach LOS	С		С					С		
Intersection Summary										
HCM 2000 Control Delay			32.4	H	CM 2000	Level of	Service		С	
HCM 2000 Volume to Capa	city ratio		0.60							
Actuated Cycle Length (s)	,		90.0	S	um of los	t time (s)			19.0	
Intersection Capacity Utiliza	ition		57.1%			of Service)		В	
Analysis Period (min)			15							
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	ሻ	∱ }			4T>						414	7
Volume (vph)	175	70	264	3	108	147	0	0	0	113	427	344
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00
Frt	1.00	0.88			0.91						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.99	1.00
Satd. Flow (prot)	1770	3002			2773						3351	1583
Flt Permitted	0.95	1.00			0.95						0.99	1.00
Satd. Flow (perm)	1770	3002			2638						3351	1583
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)	190	76	287	3	117	160	0	0	0	123	464	374
RTOR Reduction (vph)	0	28	0	0	107	0	0	0	0	0	0	235
Lane Group Flow (vph)	190	335	0	0	173	0	0	0	0	0	587	139
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov
Protected Phases	1	6			2					4	4	1
Permitted Phases				2								4
Actuated Green, G (s)	10.6	45.5			27.9						18.9	29.5
Effective Green, g (s)	12.6	47.5			29.9						20.9	33.5
Actuated g/C Ratio	0.14	0.53			0.33						0.23	0.37
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0
Lane Grp Cap (vph)	247	1584			876						778	589
v/s Ratio Prot	c0.11	c0.11									c0.18	0.03
v/s Ratio Perm					0.07							0.05
v/c Ratio	0.77	0.21			0.20						0.75	0.24
Uniform Delay, d1	37.3	11.3			21.5						32.2	19.4
Progression Factor	1.23	1.07			1.00						1.00	1.00
Incremental Delay, d2	12.0	0.3			0.5						3.7	0.1
Delay (s)	58.0	12.4			22.0						35.9	19.5
Level of Service	Е	В			С						D	В
Approach Delay (s)		28.1			22.0			0.0			29.5	
Approach LOS		С			С			А			С	
Intersection Summary												
HCM 2000 Control Delay			27.9	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	city ratio		0.44									
Actuated Cycle Length (s)			90.0	S	um of lost	time (s)			17.0			
Intersection Capacity Utiliza	ition		45.6%	IC	CU Level o	of Service			Α			
Analysis Period (min)			15									
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	*		7	*	1>		ሻ	†			ĵ»	
Volume (vph)	65	0	156	130	117	48	298	164	0	0	251	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.5	5.0	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.96		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583		1417	1752	1406		1583	1667			1469	
Flt Permitted	0.64		1.00	0.95	1.00		0.31	1.00			1.00	
Satd. Flow (perm)	1074		1417	1752	1406		522	1667			1469	
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)	71	0	170	141	127	52	324	178	0	0	273	5
RTOR Reduction (vph)	0	0	107	0	12	0	0	0	0	0	1	0
Lane Group Flow (vph)	71	0	63	141	167	0	324	178	0	0	277	0
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%
Turn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA	
Protected Phases			3 9	. i	6		3 9	8			4	
Permitted Phases	2		2	6			8					
Actuated Green, G (s)	9.4		26.7	21.5	21.5		38.7	33.0			15.9	
Effective Green, g (s)	10.4		26.7	22.5	22.5		37.7	34.0			16.9	
Actuated g/C Ratio	0.15		0.37	0.31	0.31		0.53	0.47			0.24	
Clearance Time (s)	6.0			6.0	6.0			5.5			5.5	
Vehicle Extension (s)	2.0			2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	155		527	549	441		515	790			346	
v/s Ratio Prot			0.03	0.03	c0.12		c0.14	0.11			c0.19	
v/s Ratio Perm	0.07		0.02	0.06			0.19					
v/c Ratio	0.46		0.12	0.26	0.38		0.63	0.23			0.80	
Uniform Delay, d1	28.1		14.8	18.4	19.2		11.2	11.1			25.8	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.8		0.0	0.1	0.2		1.7	0.1			11.9	
Delay (s)	28.9		14.8	18.4	19.3		12.9	11.2			37.7	
Level of Service	С		В	В	В		В	В			D	
Approach Delay (s)		19.0			19.0			12.3			37.7	
Approach LOS		В			В			В			D	
Intersection Summary												
HCM 2000 Control Delay			20.3	Н	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capac	city ratio		0.66									
Actuated Cycle Length (s)	•		71.7	S	um of lost	time (s)			22.0			
Intersection Capacity Utiliza	tion		57.7%		CU Level o		9		В			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4	7	*		7		↑ ↑			41₽	
Volume (vph)	181	40	448	118	0	86	0	195	234	97	440	0
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		4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95	
Frt		1.00	0.85	1.00		0.85		0.92			1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99	
Satd. Flow (prot)		1557	1468	1480		1369		2760			3065	
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.77	
Satd. Flow (perm)		1557	1468	1480		1369		2760			2381	
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)	197	43	487	128	0	93	0	212	254	105	478	0
RTOR Reduction (vph)	0	0	388	0	0	78	0	158	0	0	0	0
Lane Group Flow (vph)	0	240	99	128	0	15	0	308	0	0	583	0
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA	
Protected Phases	4	4	4	3		3		1			1	
Permitted Phases										1		
Actuated Green, G (s)		12.5	12.5	9.6		9.6		23.1			23.1	
Effective Green, g (s)		13.5	13.5	10.6		10.6		25.1			25.1	
Actuated g/C Ratio		0.20	0.20	0.16		0.16		0.38			0.38	
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0	
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0	
Lane Grp Cap (vph)		317	299	237		219		1048			904	
v/s Ratio Prot		c0.15	0.07	c0.09		0.01		0.11				
v/s Ratio Perm											c0.24	
v/c Ratio		0.76	0.33	0.54		0.07		0.29			0.64	
Uniform Delay, d1		24.8	22.5	25.5		23.6		14.3			16.8	
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00	
Incremental Delay, d2		8.8	0.2	1.3		0.0		0.2			1.6	
Delay (s)		33.6	22.7	26.9		23.6		14.5			18.4	
Level of Service		С	С	С		С		В			В	
Approach Delay (s)		26.3			25.5			14.5			18.4	
Approach LOS		С			С			В			В	
Intersection Summary												
HCM 2000 Control Delay			21.2	Н	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capacity	y ratio		0.62									
Actuated Cycle Length (s)			66.1	Sı	um of lost	time (s)			14.0			
Intersection Capacity Utilizatio	n		59.3%	IC	U Level o	of Service			В			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	W							
Volume (vph)	228	44	0	335	193	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0			4.0	4.0			
Lane Util. Factor	1.00			1.00	1.00			
Frt	0.98			1.00	1.00			
Flt Protected	0.96			1.00	1.00			
Satd. Flow (prot)	1723			1652	1610			
Flt Permitted	0.96			1.00	1.00			
Satd. Flow (perm)	1723			1652	1610			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	248	48	0	364	210	0		
RTOR Reduction (vph)	10	0	0	0	0	0		
Lane Group Flow (vph)	286	0	0	364	210	0		
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%		
Turn Type	Prot			NA	NA			
Protected Phases	3			1	1			
Permitted Phases				•	•			
Actuated Green, G (s)	17.6			46.2	46.2			
Effective Green, g (s)	18.6			47.2	47.2			
Actuated g/C Ratio	0.23			0.59	0.59			
Clearance Time (s)	5.0			5.0	5.0			
Vehicle Extension (s)	2.0			2.0	2.0			
Lane Grp Cap (vph)	400			974	949			
v/s Ratio Prot	c0.17			c0.22	0.13			
v/s Ratio Perm	00			00.22	00			
v/c Ratio	0.72			0.37	0.22			
Uniform Delay, d1	28.3			8.6	7.7			
Progression Factor	1.00			1.00	0.88			
Incremental Delay, d2	5.0			1.1	0.5			
Delay (s)	33.3			9.7	7.3			
Level of Service	С			Α	А			
Approach Delay (s)	33.3			9.7	7.3			
Approach LOS	С			А	А			
Intersection Summary								
HCM 2000 Control Delay			17.2	Н	CM 2000	Level of Service	В	
HCM 2000 Volume to Cap	acity ratio		0.45					
Actuated Cycle Length (s)	,		80.0	Sı	um of lost	time (s)	11.0	
Intersection Capacity Utiliz			39.6%			of Service	А	
Analysis Period (min)			15					
c Critical Lane Group								

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	ሻሻ			4₽	ħβ		
Volume (vph)	54	6	6	106	37	37	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	4.0			4.0	4.0		
Lane Util. Factor	0.97			0.95	0.95		
Frt	0.98			1.00	0.93		
Flt Protected	0.96			1.00	1.00		
Satd. Flow (prot)	3404			3529	3274		
Flt Permitted	0.96			0.93	1.00		
Satd. Flow (perm)	3404			3301	3274		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	59	7	7	115	40	40	
RTOR Reduction (vph)	6	0	0	0	28	0	
Lane Group Flow (vph)	60	0	0	122	52	0	
Turn Type	Prot		Perm	NA	NA		
Protected Phases	4			6	2		
Permitted Phases			6				
Actuated Green, G (s)	1.5			3.4	3.4		
Effective Green, g (s)	2.5			4.4	4.4		
Actuated g/C Ratio	0.17			0.30	0.30		
Clearance Time (s)	5.0			5.0	5.0		
Vehicle Extension (s)	3.0			2.0	2.0		
Lane Grp Cap (vph)	571			974	966		
v/s Ratio Prot	c0.02				0.02		
v/s Ratio Perm				c0.04			
v/c Ratio	0.11			0.13	0.05		
Uniform Delay, d1	5.3			3.8	3.8		
Progression Factor	1.00			1.00	1.00		
Incremental Delay, d2	0.1			0.0	0.0		
Delay (s)	5.3			3.9	3.8		
Level of Service	Α			Α	Α		
Approach Delay (s)	5.3			3.9	3.8		
Approach LOS	Α			Α	Α		
Intersection Summary							
HCM 2000 Control Delay			4.2	H	CM 2000	Level of Service	
HCM 2000 Volume to Capac	city ratio		0.12				
Actuated Cycle Length (s)			14.9		ım of lost		
Intersection Capacity Utilizat	tion		26.2%	IC	U Level c	of Service	
Analysis Period (min)			15				
c Critical Lane Group							

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Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	ሻ	7	ĵ.			4
Volume (veh/h)	59	36	299	53	18	219
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	39	325	58	20	238
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						417
pX, platoon unblocked	0.97					
vC, conflicting volume	631	354			383	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	600	354			383	
tC, single (s)	6.7	6.6			4.5	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	84	94			98	
cM capacity (veh/h)	396	620			1004	
Direction, Lane #	NW 1	NE 1	SW 1			
Volume Total	103	383	258			
Volume Left	64	0	20			
Volume Right	39	58	0			
cSH	638	1700	1004			
Volume to Capacity	0.16	0.23	0.02			
Queue Length 95th (ft)	14	0	1			
Control Delay (s)	14.1	0.0	8.0			
Lane LOS	В		Α			
Approach Delay (s)	14.1	0.0	0.8			
Approach LOS	В					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilizat	tion		36.4%	IC	CU Level of	f Service
Analysis Period (min)			15			
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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		1>			41
Volume (veh/h)	87	5	318	102	5	134
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	95	5	346	111	5	146
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85	0.85			0.85	
vC, conflicting volume	485	401			457	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	310	212			277	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	99			100	
cM capacity (veh/h)	558	677			1095	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	100	457	54	97		
Volume Left	95	0	5	0		
Volume Right	5	111	0	0		
cSH	564	1700	1095	1700		
Volume to Capacity	0.18	0.27	0.00	0.06		
Queue Length 95th (ft)	16	0	0	0		
Control Delay (s)	12.8	0.0	0.9	0.0		
Lane LOS	В		Α			
Approach Delay (s)	12.8	0.0	0.3			
Approach LOS	В					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utiliza	ation		34.7%	IC	U Level o	f Service
Analysis Period (min)			15			

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Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2		
Lane Configurations	ሻ	^	ħβ		*	^		ሻ		
Volume (vph)	48	402	212	66	403	706	25	39		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width	11	12	12	12	11	12	12	13		
Total Lost time (s)	4.0	4.0	4.0		3.0	4.0		4.0		
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95		1.00		
Frt	1.00	1.00	0.96		1.00	0.99		1.00		
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95		
Satd. Flow (prot)	1662	3505	3243		1728	3556		933		
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95		
Satd. Flow (perm)	1662	3505	3243		1728	3556		933		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	52	437	230	72	438	767	27	42		
RTOR Reduction (vph)	0	0	32	0	0	3	0	0		
Lane Group Flow (vph)	52	437	270	0	438	791	0	42		
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%		
Turn Type	Prot	NA	NA		Prot	NA		Prot		
Protected Phases	1	6	2		3	8		4		
Permitted Phases	•	_	_			-		•		
Actuated Green, G (s)	5.1	39.6	28.5		26.4	38.4		7.0		
Effective Green, g (s)	7.1	41.6	30.5		28.4	40.4		9.0		
Actuated g/C Ratio	0.08	0.46	0.34		0.32	0.45		0.10		
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0		
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0		
Lane Grp Cap (vph)	131	1620	1099		545	1596		93		
v/s Ratio Prot	c0.03	c0.12	0.08		c0.25	c0.22		0.05		
v/s Ratio Perm	30.00	00112	0.00		00.20	00.22		0.00		
v/c Ratio	0.40	0.27	0.25		0.80	0.50		0.45		
Uniform Delay, d1	39.4	14.9	21.5		28.2	17.6		38.2		
Progression Factor	1.20	0.90	0.98		0.99	0.99		1.00		
Incremental Delay, d2	0.6	0.3	0.5		8.4	0.2		3.5		
Delay (s)	47.9	13.7	21.5		36.3	17.7		41.6		
Level of Service	D	В	C		D	В		D		
Approach Delay (s)		17.3	21.5			24.3				
Approach LOS		В	С			С				
Intersection Summary										
HCM 2000 Control Delay			22.6	H	CM 2000	Level of S	Service		С	
HCM 2000 Volume to Capac	city ratio		0.53							
Actuated Cycle Length (s)	J		90.0	Sı	um of lost	time (s)			15.0	
Intersection Capacity Utiliza	tion		52.3%			of Service			А	
Analysis Period (min)			15							
c Critical Lane Group										

HCM Signalized Intersection Capacity Analysis 2/1/2016

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		7	f)			4	
Volume (vph)	0	0	47	71	0	60	98	206	15	23	77	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.86			0.94		1.00	0.99			0.97	
Flt Protected		1.00			0.97		0.95	1.00			0.99	
Satd. Flow (prot)		822			1446		902	1829			1385	
Flt Permitted		1.00			0.80		0.66	1.00			0.93	
Satd. Flow (perm)		822			1193		630	1829			1304	
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	51	77	0	65	107	224	16	25	84	38
RTOR Reduction (vph)	0	45	0	0	95	0	0	1	0	0	8	0
Lane Group Flow (vph)	0	6	0	0	47	0	107	239	0	0	139	0
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		9.1			9.1		49.5	49.5			49.5	
Effective Green, g (s)		10.1			10.1		50.5	50.5			50.5	
Actuated g/C Ratio		0.13			0.13		0.63	0.63			0.63	
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0	
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0	
Lane Grp Cap (vph)		103			150		397	1154			823	
v/s Ratio Prot		0.01						0.13				
v/s Ratio Perm					c0.04		c0.17				0.11	
v/c Ratio		0.06			0.31		0.27	0.21			0.17	
Uniform Delay, d1		30.8			31.8		6.6	6.3			6.1	
Progression Factor		1.00			1.00		0.67	0.61			1.00	
Incremental Delay, d2		0.1			1.2		1.6	0.4			0.4	
Delay (s)		30.9			33.0		6.0	4.2			6.5	
Level of Service		С			С		Α	Α			Α	
Approach Delay (s)		30.9			33.0			4.8			6.5	
Approach LOS		С			С			Α			А	
Intersection Summary												
HCM 2000 Control Delay			12.9	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	y ratio		0.26									
Actuated Cycle Length (s)			80.0	S	um of lost	time (s)			15.0			
Intersection Capacity Utilizatio	n		47.7%		CU Level o				А			
Analysis Period (min)			15									

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Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	
Lane Configurations	^	#	4	ሻሻ	Ž.			ፈተኩ		
Volume (vph)	302	220	6	418	20	177	9	230	224	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width	12	11	12	11	12	13	12	12	11	
Total Lost time (s)	6.0	6.0	6.0	5.0	5.0			5.0		
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.91		
Frt	1.00	0.85	1.00	1.00	0.85			0.93		
Flt Protected	1.00	1.00	1.00	0.95	1.00			1.00		
Satd. Flow (prot)	3282	1487	1776	3164	1260			4330		
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00		
Satd. Flow (perm)	3282	1487	1776	3164	1260			4330		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	328	239	7	454	22	192	10	250	243	
RTOR Reduction (vph)	0	31	0	0	68	0	0	205	0	
Lane Group Flow (vph)	328	208	7	454	146	0	0	298	0	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Turn Type	NA	Perm	NA	Prot	Prot		Split	NA		
Protected Phases	4	. 0	8	2	2		3	3		
Permitted Phases	•	4		2	2					
Actuated Green, G (s)	18.9	18.9	18.9	23.5	23.5			10.2		
Effective Green, g (s)	20.9	20.9	20.9	25.5	25.5			12.2		
Actuated g/C Ratio	0.23	0.23	0.23	0.28	0.28			0.14		
Clearance Time (s)	8.0	8.0	8.0	7.0	7.0			7.0		
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0		
Lane Grp Cap (vph)	762	345	412	896	357			586		
v/s Ratio Prot	0.10	0.10	0.00	c0.14	0.12			c0.07		
v/s Ratio Perm	0.10	c0.14	0.00	60.14	0.12			60.07		
v/c Ratio	0.43	0.60	0.02	0.51	0.41			0.51		
Uniform Delay, d1	29.5	30.9	26.6	27.0	26.1			36.1		
Progression Factor	1.00	0.99	1.00	0.82	0.87			0.99		
Incremental Delay, d2	0.1	2.0	0.0	1.7	2.8			0.3		
Delay (s)	29.5	32.7	26.6	23.7	25.6			35.9		
Level of Service	C C	C	20.0 C	23.7 C	23.0 C			D		
Approach Delay (s)	30.8	U	26.6	U	U			35.9		
Approach LOS	00.0 C		20.0 C					D		
Intersection Summary			20.0		0140000	1	I			
HCM 2000 Control Delay	L ! .		29.8	Н	CIVI 2000	Level of S	service		С	
HCM 2000 Volume to Capaci	ty ratio		0.45		6.1				40.0	
Actuated Cycle Length (s)			90.0		um of los				19.0	
Intersection Capacity Utilization	on		43.5%	IC	U Level	of Service			А	
Analysis Period (min)			15							
c Critical Lane Group										

22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10Timing Plan: Sunday Peak

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	*	∱ ∱			€ 1₽						414	7
Volume (vph)	173	53	201	1	41	55	0	0	0	60	225	237
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00
Frt	1.00	0.88			0.92						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.99	1.00
Satd. Flow (prot)	1770	3002			2775						3351	1583
Flt Permitted	0.95	1.00			0.95						0.99	1.00
Satd. Flow (perm)	1770	3002			2646						3351	1583
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)	188	58	218	1	45	60	0	0	0	65	245	258
RTOR Reduction (vph)	0	24	0	0	36	0	0	0	0	0	0	180
Lane Group Flow (vph)	188	252	0	0	70	0	0	0	0	0	310	78
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov
Protected Phases	1	6			2					4	4	1
Permitted Phases				2								4
Actuated Green, G (s)	10.6	51.7			34.1						12.7	23.3
Effective Green, g (s)	12.6	53.7			36.1						14.7	27.3
Actuated g/C Ratio	0.14	0.60			0.40						0.16	0.30
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0
Lane Grp Cap (vph)	247	1791			1061						547	480
v/s Ratio Prot	c0.11	c0.08									c0.09	0.02
v/s Ratio Perm					0.03							0.03
v/c Ratio	0.76	0.14			0.07						0.57	0.16
Uniform Delay, d1	37.3	8.0			16.6						34.7	23.0
Progression Factor	1.15	1.15			1.00						1.00	1.00
Incremental Delay, d2	11.6	0.2			0.1						8.0	0.1
Delay (s)	54.3	9.4			16.7						35.5	23.0
Level of Service	D	Α			В						D	С
Approach Delay (s)		27.6			16.7			0.0			29.8	
Approach LOS		С			В			Α			С	
Intersection Summary												
HCM 2000 Control Delay			27.7	H	CM 2000	Level of S	Service		С			
HCM 2000 Volume to Capa	city ratio		0.32									
Actuated Cycle Length (s)			90.0	Sı	um of lost	time (s)			17.0			
Intersection Capacity Utiliza	ation		31.7%		CU Level o				Α			
Analysis Period (min)			15									
c Critical Lano Group												

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻ		7	ሻ	1>		ሻ	1			ĵ»	
Volume (vph)	62	0	130	30	52	21	138	91	0	0	153	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0		4.5	5.0	5.0		4.5	4.5			4.5	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Frt	1.00		0.85	1.00	0.96		1.00	1.00			1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00	
Satd. Flow (prot)	1583		1417	1752	1405		1583	1667			1469	
Flt Permitted	0.70		1.00	0.95	1.00		0.50	1.00			1.00	
Satd. Flow (perm)	1175		1417	1752	1405		832	1667			1469	
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)	67	0	141	33	57	23	150	99	0	0	166	3
RTOR Reduction (vph)	0	0	99	0	13	0	0	0	0	0	1	0
Lane Group Flow (vph)	67	0	42	33	67	0	150	99	0	0	168	0
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%
Turn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA	
Protected Phases			3 9	1	6		3 9	8			4	
Permitted Phases	2		2	6			8					
Actuated Green, G (s)	6.4		16.6	14.1	14.1		29.6	24.6			13.9	
Effective Green, g (s)	7.4		16.6	15.1	15.1		28.6	25.6			14.9	
Actuated g/C Ratio	0.13		0.30	0.27	0.27		0.52	0.46			0.27	
Clearance Time (s)	6.0			6.0	6.0			5.5			5.5	
Vehicle Extension (s)	2.0			2.0	2.0			2.0			2.0	
Lane Grp Cap (vph)	157		426	479	384		556	773			396	
v/s Ratio Prot			0.02	0.00	c0.05		c0.04	0.06			c0.11	
v/s Ratio Perm	c0.06		0.01	0.02			0.09					
v/c Ratio	0.43		0.10	0.07	0.17		0.27	0.13			0.42	
Uniform Delay, d1	22.0		13.9	14.8	15.3		7.3	8.4			16.6	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.7		0.0	0.0	0.1		0.1	0.0			0.3	
Delay (s)	22.6		13.9	14.9	15.4		7.4	8.5			16.9	
Level of Service	С		В	В	В		А	Α			В	
Approach Delay (s)		16.7			15.2			7.8			16.9	
Approach LOS		В			В			Α			В	
Intersection Summary												
HCM 2000 Control Delay			13.5	Н	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capa	city ratio		0.40									
Actuated Cycle Length (s)			55.2	S	um of lost	time (s)			22.0			
Intersection Capacity Utiliza	ition		36.9%	IC	CU Level o	of Service	9		Α			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્ન	7	ሻ		7		∱ }			4₽	
Volume (vph)	79	17	387	61	0	44	0	106	127	56	257	0
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		4.0			4.0	
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95	
Frt		1.00	0.85	1.00		0.85		0.92			1.00	
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99	
Satd. Flow (prot)		1555	1468	1480		1369		2760			3065	
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.85	
Satd. Flow (perm)		1555	1468	1480		1369		2760			2640	
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)	86	18	421	66	0	48	0	115	138	61	279	0
RTOR Reduction (vph)	0	0	327	0	0	43	0	94	0	0	0	0
Lane Group Flow (vph)	0	104	94	66	0	5	0	159	0	0	340	0
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA	
Protected Phases	4	4	4	3		3		1			1	
Permitted Phases										1		
Actuated Green, G (s)		9.4	9.4	4.2		4.2		13.0			13.0	
Effective Green, g (s)		10.4	10.4	5.2		5.2		15.0			15.0	
Actuated g/C Ratio		0.22	0.22	0.11		0.11		0.32			0.32	
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0	
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0	
Lane Grp Cap (vph)		346	326	164		152		886			847	
v/s Ratio Prot		c0.07	0.06	c0.04		0.00		0.06				
v/s Ratio Perm											c0.13	
v/c Ratio		0.30	0.29	0.40		0.04		0.18			0.40	
Uniform Delay, d1		15.1	15.1	19.3		18.5		11.4			12.4	
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00	
Incremental Delay, d2		0.2	0.2	0.6		0.0		0.1			0.3	
Delay (s)		15.3	15.3	19.9		18.5		11.5			12.7	
Level of Service		В	В	В		В		В			В	
Approach Delay (s)		15.3			19.3			11.5			12.7	
Approach LOS		В			В			В			В	
Intersection Summary												
HCM 2000 Control Delay			14.2	Н	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capac	ity ratio		0.34									
Actuated Cycle Length (s)	_		46.7	S	um of lost	time (s)			14.0			
Intersection Capacity Utilizat	ion		46.1%		U Level o				А			
Analysis Period (min)			15									

c Critical Lane Group

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	¥			†	†	-	
/olume (vph)	124	22	0	195	195	0	
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
otal Lost time (s)	4.0			4.0	4.0		
ane Util. Factor	1.00			1.00	1.00		
-rt	0.98			1.00	1.00		
It Protected	0.96			1.00	1.00		
Satd. Flow (prot)	1724			1652	1610		
It Permitted	0.96			1.00	1.00		
atd. Flow (perm)	1724			1652	1610		
eak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
dj. Flow (vph)	135	24	0	212	212	0	
TOR Reduction (vph)	10	0	0	0	0	0	
ane Group Flow (vph)	149	0	0	212	212	0	
eavy Vehicles (%)	4%	1%	0%	15%	18%	0%	
urn Type	Prot			NA	NA		
otected Phases	3			1	1		
ermitted Phases				•	•		
ctuated Green, G (s)	11.6			52.2	52.2		
ffective Green, g (s)	12.6			53.2	53.2		
ctuated g/C Ratio	0.16			0.67	0.67		
learance Time (s)	5.0			5.0	5.0		
ehicle Extension (s)	2.0			2.0	2.0		
ine Grp Cap (vph)	271			1098	1070		
's Ratio Prot	c0.09			0.13	c0.13		
Ratio Perm							
c Ratio	0.55			0.19	0.20		
niform Delay, d1	31.1			5.2	5.2		
rogression Factor	1.00			1.00	0.68		
cremental Delay, d2	1.2			0.4	0.4		
elay (s)	32.3			5.5	3.9		
evel of Service	С			А	Α		
pproach Delay (s)	32.3			5.5	3.9		
proach LOS	С			А	Α		
tersection Summary							
CM 2000 Control Delay			12.3	Н	CM 2000	Level of Service	В
CM 2000 Volume to Cap	acity ratio		0.25				
ctuated Cycle Length (s)	.,		80.0	S	um of lost	time (s)	11.0
ntersection Capacity Utiliz	ation		25.1%		CU Level c	· · ·	Α
nalysis Period (min)			15				
Critical Lana Croun							

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	AAA			4₽	↑ ↑	
Volume (vph)	43	5	1	47	28	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.99			1.00	0.93	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	3408			3536	3274	
Flt Permitted	0.96			0.95	1.00	
Satd. Flow (perm)	3408			3355	3274	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	5	1	51	30	30
RTOR Reduction (vph)	4	0	0	0	22	0
Lane Group Flow (vph)	48	0	0	52	38	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Actuated Green, G (s)	1.7			3.1	3.1	
Effective Green, g (s)	2.7			4.1	4.1	
Actuated g/C Ratio	0.18			0.28	0.28	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			2.0	2.0	
Lane Grp Cap (vph)	621			929	906	
v/s Ratio Prot	c0.01				0.01	
v/s Ratio Perm				c0.02		
v/c Ratio	0.08			0.06	0.04	
Uniform Delay, d1	5.0			3.9	3.9	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.0	0.0	
Delay (s)	5.1			3.9	3.9	
Level of Service	Α			Α	Α	
Approach Delay (s)	5.1			3.9	3.9	
Approach LOS	Α			Α	А	
Intersection Summary						
HCM 2000 Control Delay		·	4.3	Н	CM 2000	Level of Servi
HCM 2000 Volume to Capa	city ratio		0.06			
Actuated Cycle Length (s)	•		14.8	Sı	um of lost	time (s)
Intersection Capacity Utiliza	tion		24.2%	IC	U Level o	of Service
Analysis Period (min)			15			
c Critical Lane Group						

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Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	ሻ	7	1>			ર્ન
Volume (veh/h)	89	24	171	42	15	202
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	97	26	186	46	16	220
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type			None			None
Median storage veh)						
Upstream signal (ft)						409
pX, platoon unblocked	0.98					
vC, conflicting volume	461	209			232	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439	209			232	
tC, single (s)	6.7	6.6			4.5	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	81	97			99	
cM capacity (veh/h)	505	753			1151	
Direction, Lane #	WB 1	NE 1	SW 1			
Volume Total	123	232	236			
Volume Left	97	0	16			
Volume Right	26	46	0			
cSH	641	1700	1151			
Volume to Capacity	0.19	0.14	0.01			
Queue Length 95th (ft)	18	0.14	1			
Control Delay (s)	13.0	0.0	0.7			
Lane LOS	В	0.0	A			
Approach Delay (s)	13.0	0.0	0.7			
Approach LOS	В	0.0	0.7			
	_					
Intersection Summary			2.0	1		
Average Delay	tion		3.0	10	lll ovol o	f Condoc
Intersection Capacity Utilizat Analysis Period (min)	UUH		34.6%	IC	CU Level of	Service
			15			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations	W		1>			414	-	
Volume (veh/h)	95	5	94	99	5	97		
Sign Control	Stop		Free			Free		
Grade	0%		0%			0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	103	5	102	108	5	105		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None			None		
Median storage veh)								
Upstream signal (ft)			344					
pX, platoon unblocked	0.97	0.97			0.97			
vC, conflicting volume	220	156			210			
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	177	111			167			
tC, single (s)	6.8	6.9			4.1			
tC, 2 stage (s)								
tF (s)	3.5	3.3			2.2			
p0 queue free %	87	99			100			
cM capacity (veh/h)	767	891			1363			
Direction, Lane #	WB 1	NB 1	SB 1	SB 2				
Volume Total	109	210	41	70				
Volume Left	103	0	5	0				
Volume Right	5	108	0	0				
cSH	772	1700	1363	1700				
Volume to Capacity	0.14	0.12	0.00	0.04				
Queue Length 95th (ft)	12	0	0	0				
Control Delay (s)	10.4	0.0	1.1	0.0				
Lane LOS	В		Α					
Approach Delay (s)	10.4	0.0	0.4					
Approach LOS	В							
Intersection Summary								
Average Delay			2.7					
Intersection Capacity Utiliza	ation		23.2%	IC	U Level o	f Service		
Analysis Period (min)			15					

Public Transit Services

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Public Transit Services

The Project site at Terminal E is well served by access to public transportation, including:

- □ MBTA Blue Line rail rapid transit. MBTA Blue Line service is provided at Airport Station, located approximately ¾ mile from the Project Area. Massport shuttle Routes 33 and 55 provide connections between Airport Station and Terminal E.
- □ MBTA Silver Line bus rapid transit. The MBTA Silver Line's SL1 route serves all Airport terminals, including pick-up and drop-off at Terminal E.
- □ MBTA commuter ferry service. MBTA commuter ferry service is provided to/from the Logan Airport ferry dock. The Massport Route 66 shuttle bus provides connecting service between the ferry dock and all Airport terminals.
- □ MBTA local and express bus service. MBTA local bus route 171 stops directly at Terminal E, while MBTA express bus routes 448, 449, and 459 provide service to/from the adjacent Terminal C.
- Massport shuttle bus service. On-site Massport courtesy shuttle buses provide service between all Airport terminals and the Rental Car Center, MBTA Airport Station, and the Logan Airport ferry dock.
- ☐ Massport Logan Express bus service. Massport express bus service is provided to all Airport terminals from downtown Boston (Back Bay) as well as select locations in the surrounding Boston area.
- Other intercity bus service. A number of private bus operators provide daily service to/from the Logan Airport terminals and select locations throughout Massachusetts, New Hampshire, and Maine.

The service and operational characteristics for these transit services are described in further detail below.

MBTA Blue Line Service

The MBTA Blue Line provides rail rapid transit service from Wonderland Station in Revere to Bowdoin Station in Boston. Blue Line service runs every five minutes during the weekday peak periods, every nine to ten minutes during weekday off-peak periods, and every nine to 13 minutes on weekends. The closest Blue Line station to the Project Area is Airport Station, located under the I-90 and Route 1A interchange, at the intersection of Airport access road and Porter Street in East Boston. Airport Station serves the East Boston neighborhood in addition to the Airport, with an entrance on the west side to Breman Street via Breman Street Park. The Blue Line connects with the Orange Line at State Street Station, the Green Line at Government Center Station, and commuter ferry service at Aquarium Station.

The MBTA's Blue Line trains are unique to the rest of the MBTA's system: the propulsion system is powered from the third rail and an overhead pantograph. The third rail, which provides power to the rail cars, is placed alongside the track from Bowdoin Station to Airport Station, where the line is underground. Between Airport Station and Wonderland Station, where the line operates on and above the surface in a dedicated right-of-way, the overhead pantograph is used. The pantograph is mounted on top of the Blue Line car and draws power from an overhead catenary system. The MBTA operates six-car trainsets in revenue service on the Blue Line. All Blue Line stations, except the eastbound (outbound) platform at Bowdoin Station, can accommodate the six-car trainsets.

Per the MBTA's Fall 2015 Rapid Transit Schedule, Blue Line service operates from approximately 5:00 AM to 1:00 AM on Mondays thru Thursdays, from approximately 5:00 AM to 2:00 AM on Fridays and Saturdays, and from approximately 6:00 AM to 1:00 AM on Sundays.

According to FY 2015 data provided by the MBTA, typical weekday ridership at Airport Station is estimated to include approximately 7,190 Blue Line boardings. July was the highest ridership month for Blue Line boardings at Airport Station in FY 2015, with an average of 7,950 boardings each weekday. February was the lowest ridership month, with an average of approximately 5,410 boardings each weekday. On weekends in FY 2015, Blue Line boardings at Airport Station averaged approximately 6,150 on Saturdays and 5,150 on Sundays.

MBTA Silver Line Service

The MBTA's Silver Line bus rapid transit service operates to/from Logan Airport via the SL1 route, which was initiated in 2005. The SL1 runs between South Station and Logan Airport, serving the South Boston Waterfront area and stopping at all Airport terminals. The SL1 connects with the MBTA Red Line, MBTA commuter rail, Amtrak intercity rail, and intercity bus services at South Station.

Per the MBTA's Fall 2015 Rapid Transit Schedule, SL1 service operates from approximately 5:30 AM to 12:30 AM on Mondays thru Thursdays, from approximately 5:30 AM to 2:00 AM on Fridays and Saturdays, and from 6:00 AM to 1:00 AM on Sundays. The SL1 route, between South Station and Logan Airport, runs every eight to ten minutes. Travel time for the SL1 is approximately 36 to 40 minutes roundtrip. Silver Line fares are free from the Logan Airport terminal stops.

According to Summer 2015 data provided by the MBTA, typical weekday ridership is estimated to total approximately 3,840 riders boarding the Silver Line SL1 at the Logan Airport terminals. On weekends in Summer 2015, there were approximately 2,960 boardings on Saturday and 3,540 boardings on Sunday at all terminals. Logan Airport's Terminal E has an estimated SL1 ridership of approximately 660 boardings (17% of all terminal ridership) on typical weekdays; 660 boardings (22% of all terminal ridership) on Saturdays; and 590 boardings (17% of all terminal ridership) on Sundays.

The MBTA planned Silver Line Gateway service will stop at Airport Station, with Airport terminal connections provided via existing Massport shuttle buses serving Airport Station. The Silver Line Gateway project will extend Silver Line service from the Seaport District to Chelsea via East Boston. From South Station, the proposed Silver Line Gateway route will follow the existing Silver Line route into the Seaport District, connect to the Blue Line and East Boston neighborhoods at Airport Station, and then continue into Chelsea where the route will travel in a new dedicated busway serving four new stations. The proposed Silver Line Gateway service would provide ten-minute headways in each direction. Service is estimated to begin in Spring 2017.²

MBTA Commuter Ferry Service

MBTA commuter ferry service is provided from downtown Boston, Quincy, and Hull to Logan Airport. Per the MBTA's 2015 Commuter Ferry Schedule, ferry service operates from approximately 5:30 AM to Midnight on weekdays, and from approximately 8:00 AM to Midnight on weekends. There are a total of 14 combined ferry arrivals and departures serving Logan Airport each weekday and ten combined ferry

Appendix E, Surface Transportation Technical Appendix

¹ Ridership based on raw faregate counts for FY 2015 and "non-interaction" factors provided by the MBTA. The non-interaction factors account for children, fare evaders, and others who are not counted by the automated fare collection (AFC) system. The non-interaction factor for July 2014 – September 2014 is 4.8%, while the non-interaction factor for October 2014 – June 2015 is 5.7%.

² Connecting with Transit – Silver Line Gateway presentation. Scott Hamwey. MassDOT. October 30, 2014.

arrivals and departures each Saturday and Sunday. Connections to all Airport terminals are provided from the ferry dock via the free Massport Route 66 shuttle bus.

According to the 14th Edition of the MBTA's *Ridership and Service Statistics* (the "Blue Book"), typical weekday ridership in FY 2013 consisted of approximately 950 total boardings on the entire Quincy-Boston-Logan-Hull ferry line.

MBTA Local and Express Bus Service

Several MBTA bus routes serve the Logan Airport terminals, including MBTA local bus route 171, which stops directly at Terminal E, and MBTA express bus routes 448, 449, and 459, which stop at the adjacent Terminal C. These MBTA bus routes, which operate closest to the Project Area, are described below:

- □ Route 171 operates outbound from Dudley Station in Roxbury to Airport Station via the Logan Airport terminals. Per the MBTA's Fall 2015 Bus Schedule, the route operates two early morning trips departing Dudley Station at 3:50 AM and 4:20 AM daily. According to Fall 2012 ridership data provided by the MBTA, there were 41 alightings at Logan Airport on a typical weekday, including seven alightings at Terminal E. On weekends, 39 alightings at Logan Airport were reported on a typical Saturday, while 48 alightings were reported on a typical Sunday.
- □ Route 448 operates between Marblehead and Downtown Crossing in Boston via Paradise Road and Logan Airport. Per the MBTA's Fall 2015 Bus Schedule, the route operates two inbound and three outbound trips each weekday that stop at Logan Airport's Terminal C. The route does not operate on weekends. According to Fall 2012 ridership data provided by the MBTA, there was one boarding at Logan Airport (Terminal C) on a typical weekday.
- □ Route 449 operates between Marblehead and Downtown Crossing in Boston via Humphrey Street and Logan Airport. Per the MBTA's Fall 2015 Bus Schedule, the route operates three inbound and three outbound trips each weekday that stop at Logan Airport's Terminal C. The route does not operate on weekends. According to Fall 2012 ridership data provided by the MBTA, there were two boardings at Logan Airport (Terminal C) on a typical weekday.
- □ Route 459 operates between Salem Depot in Salem and Downtown Crossing in Boston via Logan Airport. Per the MBTA's Fall 2015 Bus Schedule, the route operates between approximately 6:00 AM and 8:30 PM on weekdays, providing service roughly every 70 minutes in both directions. The route does not operate on weekends. According to Fall 2012 ridership data provided by the MBTA, there were 35 boardings at Logan Airport (Terminal C) on a typical weekday.

Massport Shuttle Bus Service

Massport operates free shuttle bus service that provides connections between all Airport terminals and the Rental Car Center, MBTA Airport Station, and the Logan Airport ferry dock. Shuttle bus services operate seven days per week and the terminal routes generally run every five to six minutes. The shuttle bus routes that directly serve the Project Area at Terminal E consist of:

- □ Shuttle Bus 11, serving all terminals;
- □ Shuttle Bus 33, serving Terminals C and E, Airport Station, and the Rental Car Center (during midday peak hours);
- □ Shuttle Bus 55, serving all terminals, Airport Station, and the Rental Car Center (during early morning and late evening off-peak hours);
- □ Shuttle Bus 66, serving all terminals, the ferry dock, and Airport Station; and
- □ Shuttle Bus 88, serving all terminals and the Economy Parking Garage.

Massport Express Bus Service

Massport's Logan Express provides non-stop bus service to/from all Logan Airport terminals and select locations in downtown Boston and the surrounding area. The Logan Express bus routes are described below.

- □ Back Bay Logan Express provides service between Hynes Convention Center and Copley Square to all Logan Airport terminals. Service to Logan Airport runs every 20 minutes, from approximately 5:00 AM until 9:00 PM, seven days a week. Service from Logan Airport runs every 20 minutes, from approximately 6:00 AM until 10:00 PM, seven days a week. Rides are free for passengers with a current, valid MBTA Pass.
- □ Braintree Logan Express provides service between Braintree and all Logan Airport terminals. On weekdays, service to Logan Airport runs every 15 minutes from 3:00 AM to 3:30 AM, and every 30 minutes from 3:30 AM to 11:00 PM. Weekday service from Logan Airport runs from 6:30 AM to 1:15 AM, operating every 30 minutes until Midnight. On Saturdays, service to Logan Airport runs every 30 minutes between 3:00 AM and 5:30 AM, and every 60 minutes between 6:00 AM and 10:00 PM. Saturday service from Logan Airport runs every 60 minutes between 7:00 AM and 11:00 PM with a final trip at 12:15 AM. On Sundays, service to Logan Airport runs every 30 minutes between 3:00 AM and 5:30 AM, every 60 minutes between 6:00 AM and Noon, and every 30 minutes between Noon and 11:00 PM. Sunday service from Logan Airport runs every 60 minutes between 7:00 AM and 1:00 PM, and every 30 minutes between 1:00 PM and Midnight, with a final trip at 1:15 AM.
- □ Framingham Logan Express provides service between Framingham and all Logan Airport terminals. On weekdays, service to Logan Airport runs every 30 minutes from 4:00 AM to 11:00 PM, with an early departure at 3:15 AM. Weekday service from Logan Airport runs every 30 minutes between 6:30 AM and Midnight with a final trip at 1:15 AM. On Saturdays, service to Logan Airport runs every 30 minutes between 4:00 AM and 5:30 AM, and every 60 minutes between 6:00 AM and 10:00 PM, with an early departure at 3:15 AM. Saturday service from Logan Airport runs every 60 minutes between 7:00 AM and 11:00 PM with a final trip at 12:15 AM. On Sundays, service to Logan Airport runs every 30 minutes between 4:00 AM and 5:30 AM, every 60 minutes between 6:00 AM and Noon, and every 30 minutes between Noon and 11:00 PM, with an early departure at 3:15 AM. Sunday service from Logan Airport runs every 60 minutes between 7:00 AM and 1:00 PM, and every 30 minutes between 1:00 PM and Midnight, with a final trip at 1:15 AM.
- □ Peabody Logan Express provides service between Peabody and all Logan Airport terminals. Service to Logan Airport runs every 60 minutes, from 3:15 AM until 10:15 PM, seven days a week. Service from Logan Airport runs every 60 minutes, from approximately 4:15 AM until 1:15 PM, seven days a week.
- □ Woburn Logan Express provides service between the Anderson Regional Transportation Center and all Logan Airport terminals. On weekdays, service to Logan Airport runs every 30 minutes, from 3:00 AM until 11:00 PM. Weekday service from Logan Airport runs every 30 minutes between 6:30 AM and Midnight, with a final trip at 1:15 AM. On Saturdays, service to Logan Airport runs every 30 to 60 minutes between 3:00 AM and 10:00 PM. Saturday service from Logan Airport runs every 60 minutes between 7:00 AM and 11:00 PM, with a final trip at 12:15 AM. On Sundays, service to Logan Airport runs every 30 to 60 minutes between 3:00 AM and 11:00 PM. Sunday service from Logan Airport runs every 60 minutes between 7:00 AM and 1:00 PM, and every 30 minutes between 1:00 PM and Midnight, with a final trip at 1:15 AM.

Other Intercity Bus Service

Multiple private carriers offer bus service to/from Logan Airport. These intercity bus services, which provide pick-up and drop-off service at Terminal E and at all other Airport terminals, are described below.

- □ Boston Express Bus provides service between Logan Airport and Concord, NH; Manchester, NH; North Londonderry, NH; Londonderry, NH; and Salem, NH via the Boston Express I-93 route. On weekdays, this route operates 18 trips to Logan Airport and 16 trips from Logan Airport. On weekends, this route operates 17 trips to and 16 trips from Logan Airport. Bus service between Logan Airport and Tyngsborough, MA; Nashua, NH; and Manchester, NH is provided via the Boston Express Route 3 service. On weekdays, this route operates 17 trips to and 13 trips from Logan Airport. On weekends, 13 trips to and 11 trips from Logan Airport are provided.³
- □ C&J Bus Lines provides service between Dover, NH; Portsmouth, NH; Newburyport, MA; and Boston. Service consists of 22 daily round trips to/from Logan Airport.⁴
- Concord Coach Lines provides service between the Concord, Berlin, Conway, Littleton, and Plymouth areas of New Hampshire and Boston. The Concord-Boston route operates 12 roundtrips to/from Logan Airport daily. In addition, Concord Coach Lines provides service between Portland, Bangor, Augusta, and the Midcoast areas of Maine and Boston. Fifteen (15) roundtrips to/from Logan Airport and Maine are provided daily.
- □ Dartmouth Coach provides service between Hanover, NH; Lebanon, NH; New London, NH; and Boston. Service consists of eight daily round trips to/from Logan Airport.⁵
- Peter Pan Bus provides direct service between Logan Airport and Cape Cod via the Boston-Falmouth-Woods Hole route and between Logan Airport and Rhode Island via the Boston-Providence route. Connecting bus service to locations in western Massachusetts, Connecticut, and New York are provided in downtown Boston. On a typical weekday, the Boston-Falmouth-Woods Hole route operates 12 bus trips to Logan Airport and ten bus trips from Logan Airport. On weekends, ten trips to and nine trips from Logan Airport are provided on this route. The Boston-Providence route operates nine trips to Logan Airport and ten trips from Logan Airport on weekdays. On weekends, seven trips to and eight trips from Logan Airport are provided on this route.
- Plymouth & Brockton provides daily service between Rockland, MA; Plymouth, MA; Sagamore, MA; Barnstable, MA; Hyannis, MA; and Boston. Weekday service consists of 16 trips to Logan Airport and 18 trips from Logan Airport. Weekend service consists of 15 trips to and 15 trips from Logan Airport.⁶

³ Per schedules effective May 31, 2015.

⁴ Per schedule effective May 2015.

⁵ Per schedule effective March 22, 2015.

⁶ Per schedule effective June 27, 2015.

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Curbside Operations Analysis

- No-Build/No-Action (existing parking freeze remains)
- Preferred Alternative (existing parking freeze remains)
- Preferred Alternative (additional 5,000 on-Airport spaces)

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No Build/No Action (existing parking freeze remains)

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Vhunt on 3/15/2016

BOS Terminal E Amyals Avia 4 / 2 10 80% 50% 100% 95% 95% Airport
Roadway location
Scenario
Level / type of roadway
Total leaves / appread leaves
Number of curdiside zones
% of 1st lane full when next vehicle double parks
% of zould lane full when next vehicle triple parks
Cosswalk adjustment factor
Regional adjustment factor

Frontage and dwell time per curbside operation vehicle class

339

25.0 25.0 40.0 40.0

Taxicabs Economy Parking MPA Employee Water Taxi & Water Ferry Vehicle Pick-Up

Interterminal	40.0	1.2							
Rental Car and MBTA BL	70.0	1.3							
Car Service	30.0	2.0							
Other Shared Ride or Limo	30.0	5.0							
Free Hotel or Other CS	40.0	1.5							
MBTA Silver Line	2007	80							
	200	3 0							
Logan Express	200	7 (
Scheduled Bus Service	20	3							
Charter Bus	20	7							
Assumptions by zone	1								
Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Name	AS	CW1	RC&BL	CW2	S	CW3	Ш	CW4	SchBus
Type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Curbside frontage (feet)	115	20	115	20	115	20	115	20	70
Number of lanes	4	4	4	4	4	4	4	4	4
Number of approach lanes	2	2	2	2	2	2	2	2	2
Volume of Venicles using roadway (vpn)				ŗ	Ţ	Ţ	Ţ	,	4
Filivate vertice rick-Op	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2 6	2 6
Taxicabs	220	220	220	220	220	220	220	220	220
Economy Parking	9	9	9	9	9	9	9	9	9
MPA Employee	9	9	9	9	9	9	9	9	9
Water Taxi & Water Ferry	2	2	2	2	2	2	2	2	2
Interterminal	9	9	9	9	9	9	9	9	9
Rental Car and MBTA BL	15	15	15	15	15	15	15	15	15
Car Service	117	117	117	117	117	117	117	117	117
Other Shared Ride or Limo	23	23	23	23	23	23	23	23	23
Free Hotel or Other CS			,		,				
MBTA Silver Line	ç	9	9	ç	g	9	9	9	G
Logan Express	7	7	7	7	7	7	7	7	7
Scheduled Bus Service	· 69	· m	. m	. m	· m	· m	· m	· 69	. 60
Charter Bus	က	က	ო	က	ო	က	က	3	3
(day) objection policy conjugate (day)									
Volume of verifices using carbone (vpri)									
FINARE VEHICLE FICK-UP									
Laxicabs									
Economy Parking	9								
MPA Employee	9								
Water Taxi & Water Ferry	2								
Interterminal	9								,
Rental Car and MBTA BL			15						
Car Service									
Other Shared Ride or Limo								•	
Free Hotel or Other CS									
MBTA Silver Line					9				•
Logan Express							7		
Scheduled Bus Service									c
Charter Bus									,

Zone 10 CharterBus active 70

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Vhunt on 3/15/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS Terminal E 2030 No-Build, Curb 1 Arrivals 4 / 2

\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \											
^ ^	Zone 10 CharterBus	70	active	432	1,696	0.255	ш	2.0	1.0	2.000	ш
^ ^	Zone 9 SchBus	70	active	432	2,682	0.161	∢	1.0	1.0	1.000	⋖
	Zone 8 CW4	20	xwalk	432	2,708	0.160	∢	A/N	N/A	N/A	N/A
†	Zone 7 LE	115	active	432	2,710	0.159	∢	1.0	2.0	0.500	∢
	Zone 6 CW3	20	xwalk	432	2,708	0.160	∢	N/A	Ϋ́Z	Ϋ́Z	N/A
Ŷ Ŷ	Zone 5 SL	115	active	432	2,710	0.159	∢	1.0	2.0	0.500	∢
	Zone 4 CW2	20	xwalk	432	2,708	0.160	∢	N/A	A/N	A/N	A/N
Ŷ Ŷ	Zone 3 RC&BL	115	active	432	2,710	0.159	∢	1.0	2.0	0.500	∢
	Zone 2 CW1	20	xwalk	432	2,708	0.160	۷	N/A	ΥN	ΥN	Ϋ́
	Zone 1 AS	115	active	432	2,720	0.159	∢	2.0	3.0	0.667	∢
↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑ ↑	Zone ID Name/description	Curb length (feet)	Zone type	Roadway volume (vph)	Roadway capacity (vph)	Roadway V/C ratio	Roadway LOS	Curb demand (# in sys 95% of time)	Curb capacity per lane (vehicles)	Curb utilization ratic	Curb LOS



Level-of-service (LOS) key:

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc. Quick Analysis Tool for Airport Roadways

Results: Detailed Report By Zone Model run by: Vhunt on 3/15/2016

				1 2 2	2010	7010	2007	0 20107	Sone 9	Zone 10
	AS	CW1	RC&BL	CW2	SL	CW3	쁘	CW4	SchBus	CharterBus
	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active
Curbside length (feet)	115	20	115	20	115	20	115	20	70	70
nes	4	4	4	4	4	4	4	4	4	4
pproach lanes	2	2	2	2	2	2	2	2	2	2
Roadway volume (vph)	432	432	432	432	432	432	432	432	432	432
nand (vph)	23		15		9		7		ო	က
ell time (minutes)	1.20		1.30		0.80		2.10		3.40	7.20
Average vehicle length (feet)	40.00		70.00		70.00		20.00		20.00	50.00
nicle arrival rate (vph)	23.00		15.00		00.9		7.00		3.00	3.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
justment factor	%0.26	%0'56	%0'56	%0'56	%0.36	%0.26	92.0%	92.0%	92.0%	92.0%
Through lane roadway capacity	2,865	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,825	1,786
ough lane roadway capacity	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,682	1,696
badway V/C ratio	0.159	0.160	0.159	0.160	0.159	0.160	0.159	0.160	0.161	0.255
Curb capacity per lane (vehicles)	3.00	•	2.00		2.00	•	2.00		1.00	1.00
ion ratio	0.667		0.500		0.500		0.500		1.000	2.000
y in lane 1	0.060	•	0.490		0.490	•	0.490		0.895	1.000
y in lane 2			•						0.095	0.745
y in lane 3										0.25
# of cars in curbside lane	1.98		0.98		0.98		0.98		0.90	1.00
barked cars									0.10	0.75
rked cars										0.245
Curbside LOS	A		∢		∢		∢		∢	ш
Roadway LOS	⋖	∢	∢	∢	∢	∢	∢	⋖	⋖	В

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

BOS
Terminal E
Amyolis
3/2
9
80%
80%
100%
95% Airport
Roadway location
Scenario
Connario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones
% of 1st lane full when next vehicle double parks
% of 2nd lane full when next vehicle triple parks
Crosswalk adjustment factor
Regional adjustment factor Summary of Inputs and Assumptions Model run by: Vhunt on 3/15/2016

Vehicle class	Vehicle parking	Average dwel
	length (feet)	time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxicabs	25.0	3.9
Economy Parking	40.0	1.2
MPA Employee	40.0	1.2
Water Taxi & Water Ferry	40.0	1.2
Interterminal	40.0	1.2
Rental Car and MBTA BL	70.0	1.3
Car Service	30.0	5.0
Other Shared Ride or Limo	30.0	5.0
Free Hotel or Other CS	40.0	1.5
MBTA Silver Line	70.0	0.8
Logan Express	20	2
Scheduled Bus Service	20	က
Charter Bus	20	7

Assumptions by zone Zone ID Name	Zone 1 Pax PU	Zone 2 CW1 xwalk	Zone 3 Pax PU	Zone 4 CW2 xwalk	Zone 5 Pax PU	Zone 6 CW3 xwalk	Zone 7 Pax PU	Zone 8 CW4 Co
Curbside frontage (feet) Number of lanes	190	3 20	115	20	115	3 20	115	20
Number of approach lanes	2	5	5	2	2	2	2	2
Volume of vehicles using roadway (vph)								
Private Vehicle Pick-Up	798	798	798	798	798	798	798	798
Taxicabs Economy Parking								
MPA Employee								
Water Taxi & Water Ferry								
Interterminal			,					
Rental Car and MBTA BL								
Car Service								
Other Shared Kide of Limo Free Hotel or Other CS	, 8	- 02	. 02	. 02	- 02	- 06	- 02	, 8
MBTA Silver Line	i ,	١,	Ι,	١,	١,	١,	١,	١,
Logan Express								
Scheduled Bus Service								
Charter Bus								
Volume of vehicles using curbside (vph)								
Private Vehicle Pick-Up	125		9/		92		9/	
Taxicabs								
Economy Parking								
MPA Employee								
Water Taxi & Water Ferry								
Interterminal								
Rental Car and MBTA BL								
Car Service								
Other Shared Ride or Limo								
Free Hotel or Other CS								
MBTA Silver Line								
Logan Express								
Scheduled Bus Service								
Charter Bus								

Quick Analysis Tool for Airport Roadways

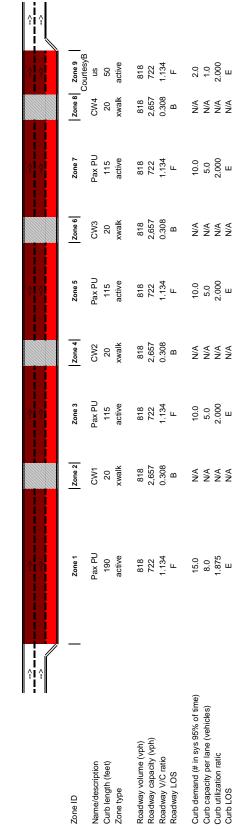
QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone

Model run by: Vhunt on 3/15/2016

Total lanes / approach lanes Number of curbside zones Level / type of roadway Airport Roadway location Scenario

BOS
Terminal E
2030 No-Build, Curb 2
Arrivals
3/2
9





Curb LOS

Zone type

Zone ID

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc. Quick Analysis Tool for Airport Roadways

Results: Detailed Report By Zone Model run by: Vhunt on 3/15/2016

Q	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7		Zone 9
Name	Pax PU	CW1	Pax PU	CW2	Pax PU	CW3	Pax PU	CW4	CourtesyBus
Type of zone	active	xwalk	active	xwalk	active	xwalk	active		active
Curbside length (feet)	190	20	115	20	115	20	115		20
Number of lanes	က	ဇ	က	9	8	က	က		9
Number of approach lanes	2	2	2	2	2	2	2		2
Roadway volume (vph)	818	818	818	818	818	818	818		818
Curbside demand (vph)	125		9/		9/		92		20
Average dwell time (minutes)	4.70		4.70		4.70		4.70		1.50
Average vehicle length (feet)	25.00		25.00		25.00		25.00		40.00
Average vehicle arrival rate (vph)	125.00		76.00		76.00		76.00		20.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	_	100.0%
Regional adjustment factor	%0.56	%0.56	%0:56	%0.56	%0'56	%0.56	%0.56	_	%0.56
Through lane roadway capacity	260	2,797	260	2,797	260	2,797	260		260
Adjusted through lane roadway capacity	722	2,657	722	2,657	722	2,657	722		722
Estimated roadway V/C ratio	1.134	0.308	1.134	0.308	1.134	0.308	1.134		1.134
Curb capacity per lane (vehicles)	8.00		2.00		2.00		2.00		1.00
Curb utilization ratio	1.875		2.000		2.000		2.000		2.000
% occupancy in lane 1	1.000		1.000		1.000		1.000		1.000
% occupancy in lane 2	0.685		0.745		0.745		0.745	•	0.745
% occupancy in lane 3	0.19		0.25		0.25		0.25		0.25
# of cars in curbside lane	8.00		2.00		2.00		2.00	•	1.00
# of double-parked cars	5.48		3.73		3.73		3.73	•	0.75
# of triple-parked cars	1.480		1.225		1.225		1.225		0.245
Curbside LOS	ш		ш		Ш		ш		ш
Roadway LOS	ш	В	ш	В	ш	ш	ш	В	ш

Quick Analysis Tool for Airport Roadways

Summary of Inputs and Assumptions Model run by: Vhunt on 3/15/2016

o Ca	202	Terminal E	2030 No-Build	Departures	4/2	-	80%	20%	100%	95%
Todio.		Roadway location	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor

	The second second
Frontage and dwell time per curbside operation	1 (-1-1-1-1)

Frontage and dwell time per curbside operation		
Vehicle class	Vehicle parking length (feet)	Average dwel tme (minutes)
Private Vehicle Drop-Off	25.0	3.4
Rental Car Drop-Off	25.0	3.4
Taxicabs	25.0	2.6
Economy Parking	40.0	1.2
MPA Employee	40.0	1.2
Water Taxi & Water Ferry	40.0	1.2
Interterminal	40.0	1.2
Rental Car and MBTA BL	20.0	0.0
Car Service	30.0	1.4
Other Shared Ride or Limo	30.0	6.0
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	20	-
Logan Express	20	-
Scheduled Bus Service	20	2
Charter Bus	20	2
Assumptions by zone		
Zone ID	Zone 1	
Name	₩.	
lype	active	
Curbside frontage (feet)	635	
Number of approach lanes	4 0	
	1	
Volume of vehicles using roadway (vph)		
Private Vehicle Drop-Off	375	
Rental Car Drop-Off		
Taxicabs	92	
Economy Parking		
MPA Employee		
Water Taxi & Water Ferry		
Interterminal		
Rental Car and MBTA BL	20	
Car Service	8	
Other Shared Ride or Limo	18	
Free Hotel or Other CS	20	
MBTA Silver Line		
Logan Express	۲ (
Scheduled Bus Service	20 (
Charter Bus	m	
Volume of vehicles using curbside (vph)		
Private Vehicle Drop-Off	375	
Rental Car Drop-Off		
Taxicabs	92	
Economy Parking		
MPA Employee		
Water Taxi & Water Ferry		
Interterminal	. 8	
Kental Car and MBIA BL	2 2	
Other Shared Bide or Limo	₽ €	
Free Hotel or Other CS	2 2	
MBTA Silver Line		
Logan Express	7	
Scheduled Bus Service	ω (
Charler bus	n	

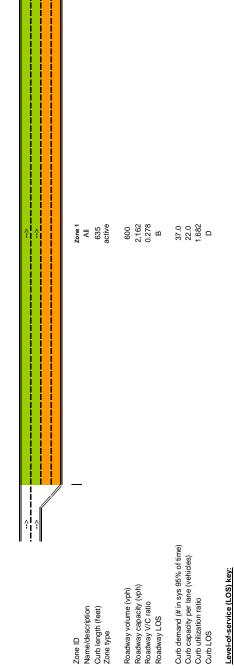
Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Vhunt on 3/15/2016

Scenario Level / type of roadway Total lanes / approach lanes Number of curbside zones Airport Roadway location







Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Vhunt on 3/15/2016

Q	Zone 1
Name	All
Type of zone	active
Curbside length (feet)	635
Number of lanes	4
Number of approach lanes	2
Roadway volume (vph)	009
Curbside demand (vph)	009
Average dwell time (minutes)	2.79
Average vehicle length (feet)	28.60
Average vehicle arrival rate (vph)	00.009
Crosswalk adjustment factor	100.0%
Regional adjustment factor	%0.56
Through lane roadway capacity	2,277
Adjusted through lane roadway capacity	2,162
Estimated roadway V/C ratio	0.278
Curb capacity per lane (vehicles)	22.00
Curb utilization ratio	1.682
% occupancy in lane 1	1.000
% occupancy in lane 2	0.590
% occupancy in lane 3	0.09
# of cars in curbside lane	22.00
# of double-parked cars	12.98
# of triple-parked cars	1.980
Curbside LOS	٥
Roadway LOS	М

Quick Analysis Tool for Airport Roadways AATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Welch on 3/15/2016

BOS	Terminal E	2030 Build, Curb 1	Arrivals	4/2	#	80%	20%	100%	%56
Airport	Roadway location	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor

Frontage and dwell time per curbside operation								
Vehicle class	Vehide parking length (feet)	Average dwell time (minutes)						
Private Vehicle Pick-Up	25.0	4.7						
Taxicabs	25.0	3.9						
Economy Parking	40.0	1.2						
MPA Employee	40.0	1.2						
Water Taxi & Water Ferry	40.0	1.2						
Interterminal	40.0	1.2						
Rental Car and MBTA BL	70.0	1.3						
Car Service	30.0	5.0						
Other Shared Ride or Limo	30.0	5.0						
Free Hotel or Other CS	40.0	1.5						
MBTA Silver Line	70.0	0.8						
Logan Express	20	2						
Scheduled Bus Service	50	1 00						
Charter Bus	90	,						
Assumptions by zone								
Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8
Name	rport Shuttles	CW1 &	CW1 & MBTA Blue	CW2	Silver Line	CW3	쁘	CW4
Type	active	xwalk	active	xwalk	active	xwalk	active	xwalk
Curbside frontage (feet)	115	20	115	20	115	20	115	20
Number of lanes	4 (4 c	4 (4 (4 c	4 (4 (4 (
Number of approach lanes	٧	N	٧	7	N	N	٧	
Volume of vehicles using roadway (vph) Private Vehicle Pick-Un	15	72	75	5	5	5	7.	7.
Taxicabs		٠.	٠.	٠.		٠.	٠.	•
Foonomy Parking	· ·	9	9	g	g	g	9	
MPA Employee	9 (5	9 (2	ေ	ယ	9 (9	ေ	о (c	9 (2
Water Taxi & Water Ferry	2	2	2	2	2	2	2	
Interterminal	9	9	9	9	9	9	9	
Rental Car and MBTA BL	15	15	15	15	15	15	15	15
Car Service								•
Other Shared Ride or Limo	: 23	23	23	23	23	83	23	23
Free Hotel or Other CS	20	50	50	50	50 9	50	20	N
MBTA Silver Line	9	ω 1	ıοı	ωı	9	9 1	ωı	
Logan Express	_ 0	_ 0	_ 0	٠ (~ 0	~ 0	~ 0	
Scheduled Bus Service Charter Bus	m «	m m	m m	n c	თ ო	n m	m m	יט מי
	1				ı		1	
Volume of vehicles using curbside (vph) Drivate Meticle Dick-Ha	,	,	,		,			
Taxicabe								
Fconomy Parking	9							
MPA Employee	9			,				
Water Taxi & Water Ferry	2							•
Interterminal	9							
Rental Car and MBTA BL			15					•
Car Service								•
Other Shared Ride or Limo								•
Free Hotel or Other CS								•
MBTA Silver Line					9			•
Logan Express							7	•
Scheduled Bus Service								•

Zone 11 CharterBus

Charter Bus

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Welch on 3/15/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS Terminal E 2030 Build, Curb 1 Arrivals 4 / 2

Ŷ Ŷ	Zone 11	CharterBus	115	active	115	2,682	0.043	∢	2.0	2.0	1.000	∢
	Zone 10	CW5	20	xwalk	115	2,708	0.042	۷	N/A	ΑŅ	A/N	N/A
?	Zone 9	SchBus	115	active	115	2,710	0.042	⋖	1.0	2.0	0.500	∢
	Zone 8	CW4	20	xwalk	115	2,708	0.042	∢	N/A	ΑX	Ϋ́Z	N/A
?	Zone 7	빌	115	active	115	2,710	0.042	∢	1.0	2.0	0.500	⋖
	Zone 6	CW3	20	xwalk	115	2,708	0.042	∢	N/A	N/A	N/A	ΝΆ
^1 ^1	Zone 5	Silver Line	115	active	115	2,710	0.042	∢	1.0	2.0	0.500	∢
	Zone 4	CW2	20	xwalk	115	2,708	0.042	∢	A/N	A/N	A/N	N/A
?	2 Zone 3 Zone 3 Zone 3 Zone 3	Blue	115	active	115	2,710	0.042	∢	1.0	2.0	0.500	⋖
	Zone 2	CW1	20	xwalk	115	2,708	0.042	∢	A/N	A/N	A/N	A/N
	Zone 1	Airport Shuttles	115	active	115	2,720	0.042	∢	2.0	3.0	0.667	∢
									time)	(Si		
	Zone ID	Name/description	Curb length (feet)	Zone type	Roadway volume (vph)	Roadway capacity (vph)	Roadway V/C ratio	Roadway LOS	Curb demand (# in sys 95% of time)	Curb capacity per lane (vehicles)	Curb utilization ratio	Curb LOS



Level-of-service (LOS) key:

Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Welch on 3/15/2016

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⊒	L Sone 1	7 auo 7	20ne 3	7 2 2 4	Zone 5	7oue 6	7 oue /	Zone 8	Zone 9	70ne 10	70ne 11
Name	Airport Shuttles	CW1 r&	MBTA Blue	CW2	Silver Line	CW3	믜	CW4	SchBus	CW5	CharterBus
Type of zone	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Curbside length (feet)	115	20	115	20	115	20	115	20	115	20	115
Number of lanes	4	4	4	4	4	4	4	4	4	4	4
Number of approach lanes	2	2	2	2	2	2	2	2	2	2	2
Roadway volume (vph)	115	115	115	115	115	115	115	115	115	115	115
Curbside demand (vph)	23		15		9		7		က		3
Average dwell time (minutes)	1.20	,	1.30		08.0		2.10		3.40		7.20
Average vehicle length (feet)	40.00		70.00		70.00		50.00		20.00		20.00
Average vehicle arrival rate (vph)	23.00		15.00		00.9		7.00		3.00		3.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Regional adjustment factor	82:0%	92.0%	%0'56	92.0%	%0'56	%0'56	%0'56	92.0%	%0.56	92.0%	95.0%
Through lane roadway capacity	2,865	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,825
Adjusted through lane roadway capacity	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,682
Estimated roadway V/C ratio	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.043
Curb capacity per lane (vehicles)	3.00		2.00		2.00		2.00		2.00		2.00
Curb utilization ratio	0.667	,	0.500		0.500		0.500		0.500		1.000
% occupancy in lane 1	0.660	•	0.490		0.490		0.490	•	0.490		0.895
% occupancy in lane 2	,	•	•								0.095
% occupancy in lane 3											
# of cars in curbside lane	1.98	•	0.98		0.98		0.98		0.98		1.79
# of double-parked cars	•	•	•						•		0.19
# of triple-parked cars		i	i		i		•		•		
Curbside LOS	∢		∢		∢		∢		∢		A
Roadway LOS	٧	∢	∢	∢	4	∢	∢	∢	∢	∢	4

Quick Analysis Tool for Airport Roadways AATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Welch on 3/1/2016

BOS	Terminal E	2030 Build, Curb 2	Arrivals	3/2	S		triple parks 50%	100%	82%
Airport	Roadway location	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor

Private Vehicle Pick-Up avicabs Economy Parking MPA Employee MPA Employee Mater Taxi & Water Ferry interferminal Rental Car and MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line MBTA Silver Line Logan Express	25.0 25.0 40.0 40.0 40.0 40.0 70.0 30.0	3.9			
Taxicabo Taxicabo Economy Parking MPA Employee Water Taxis & Water Ferry Interterminal & Water Ferry Interterminal Car and MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express	2, 22 2, 24 3, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0,	1. 6. 0. 6			
Economy Parking MPA Employee MPA Employee Water Taxi & Water Ferry Interterminal Car Service Other Shared Ride or Limo Other Shared Ride or Limo MBTA Silver Line Logan Express	4 4 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6.5			
MPA Employee MPA Employee MPA Employee Metar Taxi & Water Ferry Interterminal Rental Car and MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS Logan Express	40.0 40.0 40.0 70.0 30.0 30.0 30.0				
Wate Employee Water Tank & Water Ferry Interterminal Interterminal MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express	40.0 40.0 40.0 70.0 30.0 30.0	1 4			
whate I saw & Water Ferry Inferterminal Rental Car and MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Shver Line Logan Express	40.0 40.0 70.0 30.0 30.0	7.7			
Interterminal Rental Car and MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express	40.0 70.0 30.0 30.0	1.2			
Car Service and MBTA BL Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express	70.0 30.0 30.0	1.2			
Car Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express	30.0 30.0	1.3			
Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express	30.0	2.0			
Free Hotel or Other CS MBTA Silver Line Logan Express		5.0			
MBTA Silver Line Logan Express	40.0	1.5			
Logan Express	70.0	0.8			
	20	2			
Scheduled Bus Service	20	9			
Charter Bus	20	7			
Assumptions by zone	70001	70007	70003	70007	,
2 0 0 N	Day Dickin	Z 2007	Day Dickin	- CWO	Pay P
Topo	active	xwa k	active	xwa k	5
Curbside frontage (feet)	190	20	115	2	
Number of Janes		e e	. m	3 65	
Number of approach lanes	2	2	2	2	
Volume of vehicles using roadway (vph)					
Private Vehicle Pick-Up	208	708	708	208	
Taxicabs					
Economy Parking					
MPA Employee					
Water Taxi & Water Ferry					
Interterminal					
Kental Car and MBIA BL					
Car Service					
Other Shared Ride or Limo					
Free Hotel of Other CS MBTA Silver Line					
Company Express			,		
Cogail Expless					
Charter Bus	•				
Volume of vehicles using curbside (vph)					
Private Vehicle Pick-Up	02		42		
Taxicabs					
Economy Parking					
MPA Employee					
Water last & Water Felly					
Reptal Car and MBTA BI					
Car Service				•	
Other Shared Ride or Limo					
Free Hotel or Other CS					
MBTA Silver Line					
Logan Express					
Scheduled Bus Service					
Charter Bus					

Quick Analysis Tool for Airport Roadways

Results: Level-of-Service by Zone Model run by: Welch on 3/15/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS Terminal E 2030 Build, Curb 2 Arrivals 3 / 2 5

Ŷ	_		
	Zone 5 Pax Pickup 530 active	708 1,923 0.368 B	22.0 21.0 1.048 B
	Zo xwalk	708 2,657 0.266 B	4 4 4 4 2 2 2 2
^ ^	Zone 3 Pax Pickup 115 active	708 1,318 0.537 C	7.0 5.0 1.400 D
	Zone 2 CW1 20 xwalk	708 2,657 0.266 B	4 4 4 4 2 2 2 2
^1 ^1	Zone 1 Pax Pickup 190 active	708 1,589 0.445 C	10.0 8.0 1.250 C
	Zone ID Name/description Curb length (feet) Zone type	Roadway volume (vph) Roadway capacity (vph) Roadway V/C ratio Roadway LOS	Curb demand (# in sys 95% of time) Curb capacity per lane (vehicles) Curb utilization ratio Curb LOS



QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc. Quick Analysis Tool for Airport Roadways

Results: Detailed Report By Zone Model run by: Welch on 3/15/2016

٩		1	ı		1
<u> </u>	Zone 1	7 oue 7	Zone 3	7 one 4	c auoz
Name	Pax Pickup	CW1	Pax Pickup	CW2	Pax Pickup
Type of zone	active	xwalk	active	xwalk	active
Curbside length (feet)	190	20	115	20	530
Number of lanes	ო	က	က	က	ဇ
Number of approach lanes	2	2	2	2	2
Roadway volume (vph)	708	708	208	208	208
Curbside demand (vph)	70		42		195
Average dwell time (minutes)	4.70		4.70		4.70
Average vehicle length (feet)	25.00		25.00		25.00
Average vehicle arrival rate (vph)	70.00		42.00		195.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%
Regional adjustment factor	92.0%	92.0%	%0.56	%0.56	%0.56
Through lane roadway capacity	1,674	2,797	1,389	2,797	2,025
Adjusted through lane roadway capacity	1,589	2,657	1,318	2,657	1,923
Estimated roadway V/C ratio	0.445	0.266	0.537	0.266	0.368
Curb capacity per lane (vehicles)	8.00		2.00		21.00
Curb utilization ratio	1.250		1.400		1.048
% occupancy in lane 1	1.000		1.000		0.920
% occupancy in lane 2	0.240		0.390		0.120
% occupancy in lane 3	i				
# of cars in curbside lane	8.00		2.00		19.32
# of double-parked cars	1.92		1.95		2.52
# of triple-parked cars	i				
Curbside LOS	O		۵		М
Roadway LOS	O	В	O	Δ	В

Quick Analysis Tool for Airport Roadways AATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Welch on 3/15/2016

BOS	Terminal E	2030 Build	Departures	4/2	-	80%	20%	100%	%26	
Airport	Roadway location	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor	

Frontage and dwell time per curbside operation Vehicle class	Vehicle parking	Average dwell
	length (feet)	time (minutes)
Private Vehicle Drop-Off	25.0	3.4
Rental Car Drop-Off	25.0	3.4
Taxicabs	25.0	2.6
Economy Parking	40.0	1.2
MPA Employee	40.0	1.2
Water Taxi & Water Ferry	40.0	1.2
Interterminal	40.0	1.2
Rental Car and MBTA BL	70.0	6.0
Car Service	30.0	1.4
Other Shared Ride or Limo	30.0	6.0
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	02	_
Logan Express	20	_
Scheduled Bus Service	20	2
Charter Bus	20	2
Assumptions by zone		
Zone ID	Zone 1	
Name	IF	
Туре	active	
Curbside frontage (feet)	635	
Number of lanes	4	
Number of approach lance	c	

Zone 1 All active 635 2	375 65 65 65 20 7 7 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	375 65 6 20 20 84 18
Assumptions by zone Zone ID Name Type Curbside frontage (feet) Number of lanes Number of approach lanes	Volume of vehicles using roadway (vph) Private Vehicle Drop-Off Rental Car Drop-Off Taxicals Taxicals Top-Off Taxicals Top-Off Taxicals MAR Employee Water Taxi & Water Ferry Interterminal Rental Car and MBTA BL Car Service Car Service Ride or Limo Free Hotel or Other CS MBTA Silver Line Logan Express Scheduled Bus Service Charter Bus	Volume of vehicles using curbside (vph) Private Vehicle Drop-Off Rental Car Drop-Off Taxicabs Economy Parking MPA Employee Water Taxi & Water Ferry Interterminal Rental Car and MBTA BL Car Service Other Sharder Re or Limo Free Holel or Other CS MBTA Silver Line

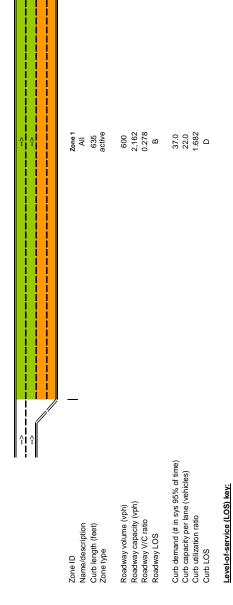
Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Welch on 3/15/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS Terminal E 2030 Build Departures 4/2



Quick Analysis Tool for Airport Roadways QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Welch on 3/15/2016

Zone 1	All	active	635	4	2	009	009	2.79	28.60	00.009	100.0%	92.0%	2,277	city 2,162	0.278	22.00	1.682	1.000	0.590	0.09	22.00	12.98	1.980		
Ω	Name	Type of zone	Curbside length (feet)	Number of lanes	Number of approach lanes	Roadway volume (vph)	Curbside demand (vph)	Average dwell time (minutes)	Average vehicle length (feet)	Average vehicle arrival rate (vph)	Crosswalk adjustment factor	Regional adjustment factor	Through lane roadway capacity	Adjusted through lane roadway capacity	Estimated roadway V/C ratio	Curb capacity per lane (vehicles)	Curb utilization ratio	% occupancy in lane 1	% occupancy in lane 2	% occupancy in lane 3	# of cars in curbside lane	# of double-parked cars	# of triple-parked cars	Curbside LOS	

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Vhunt on 3/15/2016

BOS
Terminal E
Arrivals
4 / 2
11
80%
50%
100%
95% Airport
Roadway location
Scenario
Cenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones
% of 1st lane full when next vehicle double parks
% of zold lane full when next vehicle triple parks
Cosswalk adjustment factor
Regional adjustment factor

Frontage and dwell time per curbside operation Vehicle class

25.0 25.0 25.0 40.0 40.0 70.0 30.0 50

Taxicabs Economy Parking MPA Employee Water Taxi & Water Ferry Vehicle Pick-Up

Interterminal	40.0	1.2								
Rental Car and MBTA BL	20.0	1.3								
Car Service	30.0	2.0								
Other Shared Ride or Limo	30.0	2.0								
Free Hotel or Other CS	40.0	1.5								
MBTA Silver Line	20.0	0.8								
Logan Express	20	2								
Scheduled Bus Service	20	က								
Charter Bus	20	7								
Assumptions by zone										
Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10
Name	AS	CW1	RC&BL	CW2	S	CW3	Щ	CW4	SchBus	CW5
Type	active	xwalk								
Curbside frontage (feet)	115	20	115	20	115	20	115	20	115	20
Number of lanes	4	4	4	4	4	4	4	4	4	4
Number of approach lanes	2	2	2	2	2	2	2	2	2	2
Volume of vehicles using roadway (vph)										
Private Vehicle Pick-Up	15	15	15	15	15	15	15	15	15	15
Taxicabs										
Economy Parking	9	9	9	9	9	9	9	9	9	9
MPA Employee	9	9	9	9	9	9	9	9	9	9
Water Taxi & Water Ferry	2	2	2	2	2	2	2	2	2	2
Interterminal	9	9	9	9	9	9	9	9	9	9
Rental Car and MBTA BL	15	15	15	15	15	15	15	15	15	15
Car Service										
Other Shared Ride or Limo	23	23	23	23	23	23	23	23	23	23
Free Hotel or Other CS	50	20	20	20	20	20	50	50	50	50
MBI A Silver Line	10	1 0	10	1 0	1 0	10	10	1 0	1 0	10
Cobadilad Die Series	- (- (- (~ 0	- (- (~ (- (~ 0	- (
Scheduled bus Service Charter Bus	ne	າຕ	າຕ	n m	n m	იო	იო	n m	n m	n m
Volume of vehicles using curbside (vph)										
Private Vehicle Pick-Up				,						
Taxicabs										
Economy Parking	9									
MPA Employee	9									
Water Taxi & Water Ferry	2									
Interterminal	9		. !							
Rental Car and MBTA BL			15							
Car Service										
Other Shared Ride or Limo										
Free Hotel or Other CS										
MBTA Silver Line					9		. '			
Logan Express							7			
Scheduled Bus Service									9	
Charter Bus										

Zone 11 CharterBus active 115

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Vhunt on 3/15/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS Terminal E 2030 Build, Curb 1 Arrivals 4 / 2

AS C
115 2
active xwalk
115 115
.,
0.042 0.042
A A
2.0 N/A
3.0 N/A
0.667 N/A
A N/A



Level-of-service (LOS) key:

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Vhunt on 3/15/2016

QI	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11
Name	AS	CW1	RC&BL	CW2	SL	CW3	Щ	CW4	SchBus	CW5	CharterBus
Type of zone	active	xwalk	active								
Curbside length (feet)	115	20	115	20	115	20	115	20	115	20	115
Number of lanes	4	4	4	4	4	4	4	4	4	4	4
Number of approach lanes	2	2	2	2	2	2	2	2	2	2	2
Roadway volume (vph)	115	115	115	115	115	115	115	115	115	115	115
Curbside demand (vph)	23		15		9		7	•	က		က
Average dwell time (minutes)	1.20		1.30		0.80		2.10		3.40		7.20
Average vehicle length (feet)	40.00		70.00		70.00		20.00	•	20.00		20.00
Average vehicle arrival rate (vph)	23.00		15.00		00.9	1	7.00		3.00	•	3.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Regional adjustment factor	%0.26	%0.56	%0'56	%0'56	%0'56	%0'56	%0.36	%0.26	92.0%	92.0%	92.0%
Through lane roadway capacity	2,865	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,825
Adjusted through lane roadway capacity	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,682
Estimated roadway V/C ratio	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.043
Curb capacity per lane (vehicles)	3.00		2.00		2.00		2.00	•	2.00		2.00
Curb utilization ratio	0.667		0.500		0.500		0.500		0.500		1.000
% occupancy in lane 1	0.660		0.490	•	0.490	•	0.490		0.490	•	0.895
% occupancy in lane 2	i			ı	ı	ı		i	ı		0.095
% occupancy in lane 3				•	•	•			•	•	
# of cars in curbside lane	1.98		0.98	ı	0.98	ı	0.98	i	0.98		1.79
# of double-parked cars	•	,	•					,			0.19
# of triple-parked cars	•		ı	i	i	i		•	i	i	
Curbside LOS	A		∢		∢		∢		∢		∢
Roadway LOS	∢	∢	∢	۷	A	∢	4	∢	٨	A	∢

Quick Analysis Tool for Airport Roadways AATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Welch on 3/15/2016

BOS	Terminal E	2030 Build, Curb 2	Arrivals	3/2	5		rks 50%	100%	95%
Airport	Roadway location	Scenario	Level / type of roadway	Total lanes / approach lanes	Number of curbside zones	% of 1st lane full when next vehicle double parks	% of 2nd lane full when next vehicle triple parks	Crosswalk adjustment factor	Regional adjustment factor

witking eve A Water Ferry and MBTA BL G Ride or Limo r Other CS Line s by zone s by zone s by zone hicke up s by zone A Water Ferry withing eve eve s water Ferry water withing eve eve s water Ferry water withing eve s water Ferry withing eve s water Ferry c Other CS withing eve sinking eve eve s water Ferry withing eve eve s water Ferry withing eve eve eve d Ride or Limo r Other CS withing eve c Other CS withing eve eve d Ride or Limo r Other CS withing eve eve eve eve eve eve eve e	Vehicle Pick-Up 25.0 47 Vehicle Pick-Up 25.0 47 may braking 40.0 1.2 may carry 40.0 1.2 may braking	Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)			
Parking	Table Service 25.0 3.9 Table Service Interest of early of any order of current of any order of current of services and well-feet, up a	Private Vehicle Pick-Up	25.0	4.7			
my Parking	Maintenance	Taxicabs	25.0	68			
Taxi & Water Ferry 400 1.2 To car and MBTA BL 700 1.3 Salver Line 50 2 Salver Line 60 2 Salver Line 700 0.8 Salver Line 700 0.8 To dianes 700 0.8 To dianes 700 0.8 To dianes 700 0.8 To dianes 700 0.8 Taxi & Water Ferry 700 0.8 Taxi & Water Fer	Taxi & Water Ferry 400 1.1.2	Economy Parking	40.0	1.0			
Triany & Water Ferry	Taxi & Water Fenry 400 112 Taxi & Water Fenry 400 112 Car and MATA BL 700 12 Shared Ride or Limo 300 50 Shared Ride or Limo 0.8 Figure Pick-Up 100 Shared Ride or Limo 0.8 Shared Ride Service 0.8 Shared Ride Service 0.8 Shared Ride or Limo 0.8 Shared Ride Service 0.8 Shared Ride Service 0.8 Shared Ride Service 0.8 Shared Ride or Limo 0.8 Shared Ride or Limo 0.8 Shared Ride Service 0.8 Shared Ride Servic	MDA Employee	0.04	i C			
The control of the co	Time and META BL. Act and MET	Water Taxi & Water Fern	40.0	1,0			
Active Pick-Up Total MBTA BL Total	Cara and MBTA BL. 70.0 1.3 Cara and MBTA BL. 70.0 1.3 Anade (see Infinotes by zone or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line BLs. Service by 2004 or other CS short Line Bls. Service by 2004 or other C	Interterminal	0.04	i C			
Active Pick-Up State Ride or Limo State Ride	Activities believe using curboide (yph) Silver Line Express So of early Marking modules using curboide (yph) Parking believe using curboide (vph) Parking modules using curboide (vph) Parking modules and MBTA BL Shared Ride or Limo Carl MBTA BL Shared R		0.04	1 6			
A Market Ride or Limo 300 500 500 500 500 500 500 500 500 500	Shared Ride or Limo 30,0 30,	Rental Car and MDIA DL	0.07				
And the first of t	Autorical East Service Car and MBTA BL Figure Ride or Univer CS Figure Line Styrest Line Car and MBTA BL Figure Service	Cal Gelvice	30.0	0.0			
State Chief Chie	State Line State	Other Shared Ride or Limo	30.0	0.0			
Silver Line Silve	Silver Line Solver Line Suppress John Sanking John San	Free Hotel or Other CS	40.0	1.5			
Express Exp	Express 50 2 Express 50 7 Plans Cone 1 Zone 2 Zone 3 Zone 4 Pax Plokup CW1 Pax Plokup CW2 Pax Plokup CW2 Pax Plokup CW3 Pax Plokup CW4 Pax	MBTA Silver Line	70.0	0.8			
Juliah Bus Service	luid Bus Service 50 7 Flux Service By Zone 1 Zone 2 Zone 3 Zone 4 Day Pickup CW1 Pax Pickup CW2 Awalk active walk water Ferry walk active walk activ	Logan Express	20	2			
Pack potential price of the process	Pipe Zone 1 Zone 2 Zone 3 Zone 4 Pax Pickup P	Scheduled Bus Service	20	3			
Par Plekup Bar Plekup GW1 Pax Plekup active active	Pax Plokup Off Tanes de frontage (feet) Pax Plokup Off Tanes active xwalk active	Charter Bus	20	7			
Descriptions by zone	Decidions by zone Zone 1 Zone 2 Zone 3 Zone 4						
Content	Deficiency Contests and Mark Bush Contests an	Assumptions by zone		1	,		
Pax Pickup	Fax Frokup CW71 Pax Prokup CW71 rad trottege (feet) active active CW2 active Prokup CW3 activ	Zone ID	L Sone 1	7 auo7	20ne 3	20ne 4	. 7ou
active xwalk active or ide frontage (feet) 15 and well and well and well are so and active and well are so and	active xwalk active control active state active set of lanes active set of lanes active set of lanes active set of lanes active active set of lanes active active set of lanes active active active set of lanes active act	Name	Pax Pickup	ر د	Pax Pickup	CW2	ă
190 20 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	190 20 115 2 2 3 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5	Type	active	xwalk	active	xwalk	
3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Curbside frontage (feet)	190	20	115	20	
648 648 648 648 648 648 648 648 648 648	648 648 648 648 648 648 648 648 648 648	Number of lanes	3	3	3	3	
648 648 648 648 648	648 648 648 648 648 648 648 648 648 648	Number of approach lanes	2	2	7	2	
648 648 648 648 648 648 648 648 648 648	648 648 648 648 648 648 648 648 648 648	Volume of vehicles using roadway (vph)					
		Private Vehicle Pick-Up	648	648	648	648	
	8	Taxicabs					
8		Economy Parking					
		MPA Employee					
		Water Taxi & Water Ferry				٠	
		Interterminal		,			
		Rental Car and MBTA BL					
8		Car Service					
8	8	Other Shared Ride or Limo				•	
	8	Erea Hotel or Other CS					
8		MBTA Silver Line					
		Cogail Expless					
		Scrieduled bus service					
8	8	Charter Bus					
8	%	Volume of vehicles using curbside (vph)					
		Private Vehicle Pick-Up	26		34		
Economy Parking MPA Employee Individual Employ	Economy Parking Water Trank Water Ferry Ferrat Gar and MBTA BL Car Service Action Control Control Free Hotel or Other CS MBTA Silver Line Scheduled Bus Service Charter Bus Charter Bus Charter Bus	Taxicabs		•			
MPA Employee Water Tax & Water Ferry Water Tax & Water Ferry Water Tax & Water Ferry Interterminal Rental Car and MBTA BL Car Service And Tax Silver Line Shorter Share Silver Line Schoded Bus Service	MPA Employee	Economy Parking					
Water Taxi & Water Ferry Interterminal Rental Car and MBTA BL Sandor Car and MBTA BL Other Shared Ride or Limo Free Motole or Other CS Logan Express Scheduled Bus Service	Water Taxi & Water Ferry	MPA Employee				٠	
Interterminal Renta Car and MBTA BL Card Service Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Schedeld Bus Service Schedeld Bus Service	Interterminal Rental Car and MBTA BL Car Service and MBTA BL Other Sharked Ride or Limo Free Hotel or Other CS Logan Express Scheduled Bus Service Charter Bus	Water Taxi & Water Ferry					
Rental Carl and MBTA BL Carl SewCice Other Shared Rice or Limo Free Hotel or Other CS MBTA Silver Line Scheduled Bus Service	Rential Craim and MBTA BL	Interterminal		•		٠	
Car Service Other Shared Rice or Limo Free Hotel or Other CS Logan Express Scheduled Bus Service	Car Service Car Service Free Hotel or Other CS MBTA Silver Line Supara Express Coheduled Bus Service	Rental Car and MBTA BL				٠	
Other Shared Ride or Limo Free Hotel or Other CS MBTA Silver Line Schooled Bus Service Schooled Bus Service	Other Shared Ride or Limo	Car Service				٠	
Free Hotel of Other CS MBTA Silver Line Logan Express Scheduled Bus Service	Free Hotel or Other CS	Other Shared Ride or Limo				٠	
MBTA Sliver Line Logan Express Schedide Bus Service	MBTA Silver Line Scheduled Bus Service Charler Bus	Free Hotel or Other CS				٠	
Logan Express Scheduled Bus Sewice	Logan Express Scheduled Bus Service	MBTA Silver Line					
Scheduled Bus Service	Scheduled Bus Service	Logan Express					
Aborton	Charter Bus	Scheduled Bus Service					
		Charter Bus				٠	

Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Welch on 3/15/2016

Airport
Roadway location
Scenario
Level / type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS Terminal E 2030 Build, Curb 2 Arrivals 3 / 2 5

· ·	_									
ŶŢŶ	Zone 5 Pax Pickup 530	active	648	2,143	0.302	Ø	18.0	21.0	0.857	4
	Zone 4 CW 2 20	xwalk	648	2,657	0.244	⋖	N/A	N/A	N/A	ø/N
^ ^	Zone 3 Pax Pickup 115	active	648	1,676	0.387	В	0.9	5.0	1.200	c
	Zone 2 CW1 20	xwalk	648	2,657	0.244	∢	A/N	Α/N	A/N	A/N
?	Zone 1 Pax Pickup 190	active	648	1,976	0.328	Ф	8.0	8.0	1.000	4
↑ ↑ ↑	Zone ID Name/description Curb length (feet)	Zone type	Roadway volume (vph)	Roadway capacity (vph)	Roadway V/C ratio	Roadway LOS	Curb demand (# in sys 95% of time)	Curb capacity per lane (vehicles)	rb utilization ratio	SOLITATION



Quick Analysis Tool for Airport Roadways AATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Welch on 3/15/2016

QI	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Name	Pax Pickup	CW1	Pax Pickup	CW2	Pax Pickup
Type of zone	active	xwalk	active	xwalk	active
Curbside length (feet)	190	20	115	20	230
Number of lanes	က	က	က	8	ဇ
Number of approach lanes	7	2	2	2	2
Roadway volume (vph)	648	648	648	648	648
Curbside demand (vph)	26		34		157
Average dwell time (minutes)	4.70		4.70		4.70
Average vehicle length (feet)	25.00		25.00		25.00
Average vehicle arrival rate (vph)	26.00		34.00		157.00
Crosswalk adjustment factor	100.0%	100.0%	100.0%	100.0%	100.0%
Regional adjustment factor	%0.56	92.0%	%0.56	92.0%	%0.56
Through lane roadway capacity	2,082	2,797	1,765	2,797	2,257
Adjusted through lane roadway capacity	1,976	2,657	1,676	2,657	2,143
Estimated roadway V/C ratio	0.328	0.244	0.387	0.244	0.302
Curb capacity per lane (vehicles)	8.00		2.00		21.00
Curb utilization ratio	1.000		1.200		0.857
% occupancy in lane 1	0.895		0.995		0.825
% occupancy in lane 2	0.095		0.195		0.025
% occupancy in lane 3	,				
# of cars in curbside lane	7.16		4.98		17.33
# of double-parked cars	0.76		0.98		0.53
# of triple-parked cars					
Curbside LOS	۷		O		٧
Roadway LOS	В	∢	В	∢	В

Quick Analysis Tool for Airport Roadways AATAR V0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Summary of Inputs and Assumptions Model run by: Welch on 3/15/2016

BOS
Terminal E
2030 Build
Departures
4 / 2
1
80%
50%
100%
95% Airport
Readway location
Scenario
Centrario
Level / type of roadway
Total laness / approach lanes
Number of curbside zones
% of 1st lane full when next vehicle druble parks
% of zold lane full when next vehicle triple parks
Crosswalk adjustment factor
Regional adjustment factor

Frontage and dwell time per curbside operation		
Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Drop-Off	25.0	3.4
Rental Car Drop-Off	25.0	3.4
Taxicabs	25.0	2.6
Economy Parking	40.0	1.2
MPA Employee	40.0	1.2
Water Taxi & Water Ferry	40.0	1.2
Interterminal	40.0	1.2
Rental Car and MBIA BL	70.0	6.0
Car Service	30.0	4.6
Other Shared Ride or Limo	30.0	6.0
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	0,	_
Logan Express	20	- (
Scheduled Bus Service	20	2 0
Charter bus	06	7
Assumptions by zone		
Zone ID	Zone 1	
Name	¥	
Type	active	
Curbside frontage (feet)	635	
Number of lanes	4	
Number of approach lanes	2	
(day) yourbear paint additor of amily)		
Private Vehicles using roadway (vpr.)	375	
Postal Car Drop Off	0/0	
Taxicabe	. 8	
Foodowy Darking	3 ,	
MPA Employee		
Water Taxi & Water Ferry		
Interterminal		
Rental Car and MBTA BL	20	
Car Service	8	
Other Shared Ride or Limo	18	
Free Hotel or Other CS	20	
MBTA Silver Line		
Logan Express	7	
Scheduled Bus Service	80	
Charter Bus	ო	
Volume of vehicles using curbside (vph)		
Private Vehicle Drop-Off	375	
Rental Car Drop-Off		
Taxicabs	65	
Economy Parking		
MPA Employee		
Water Taxi & Water Ferry		
Interterminal		
Rental Car and MBTA BL	20	
Car Service	84	
Other Shared Ride or Limo	18	
Free Hotel or Other CS	20	
MBTA Silver Line	. '	
Logan Express	~ 0	
Scrieduled bus service	0 0	

က

Charter Bus

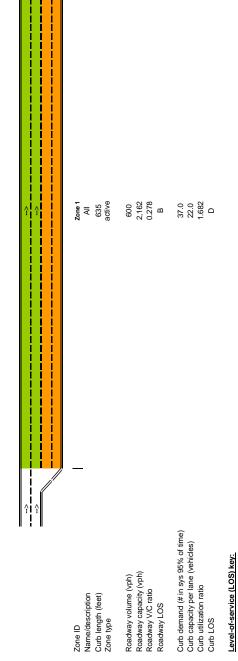
Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Level-of-Service by Zone Model run by: Welch on 3/15/2016

Model run by: Welch on 3/15/2016
Airport
Roadway location
Scenario
Level type of roadway
Total lanes / approach lanes
Number of curbside zones

BOS
Terminal E
2030 Build
Departures
4 / 2



Quick Analysis Tool for Airport Roadways

QATAR v0.6 developed by LeighFisher in association with Dowling Associates, Inc.

Results: Detailed Report By Zone Model run by: Welch on 3/15/2016

Zone 1	IIV	active	635	4	2	009	009	2.79	28.60	00.009	100.0%	82.0%	2,277	2,162	0.278	22.00	1.682	1.000	0.590	0.00	22.00	12.98	1.980	۵	В
	Name	Type of zone	Curbside length (feet)	Number of lanes	Number of approach lanes	Roadway volume (vph)	Curbside demand (vph)	Average dwell time (minutes)	Average vehicle length (feet)	Average vehicle arrival rate (vph)	Crosswalk adjustment factor	Regional adjustment factor	Through lane roadway capacity	Adjusted through lane roadway capacity	Estimated roadway V/C ratio	Curb capacity per lane (vehicles)	Curb utilization ratio	% occupancy in lane 1	% occupancy in lane 2	% occupancy in lane 3	# of cars in curbside lane	# of double-parked cars	# of triple-parked cars	Curbside LOS	Roadway LOS

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Roadway Merge, Diverge, and Weave Analysis

- No-Build/No-Action (existing parking freeze remains)
- Preferred Alternative (existing parking freeze remains)
- Preferred Alternative (additional 5,000 on-Airport spaces)

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Diverge_1

Departure Level Entrance from TAR

Scenario: No-Build/No-Action (existing parking freeze remains)

D 12 V_{12} 1211 821 \mathbf{v}_{R} 1211 V_{F} f_{hvR} 0.94 f_{hvF} 0.98 f_p 0.85 From HCM 2010 Text/Table, unfamiliar drivers PHF_R 0.90 PHF_{F} 0.82

HV%	0.12	HV%	0.05	
E_T	1.5	E _T	1.5	
V_R	595	V_{F}	826	
V_{existing}	437	V_{existing}	668	
V_{P15}	121	V_{P15}	203	
L_D	330			
P_{FD}	1	From Table	13-7 HCM	2010

Departure Exit from Curbside to TWT or Service Rd/SCT/Rt1A Scenario: No-Build/No-Action (existing parking freeze remains)

D	8	
V_{12}	#DIV/0!	
\mathbf{v}_{R}	#DIV/0!	
V_{F}	857	
$f_{h\nu R}$	1.00	
$f_{h\nu F}$	0.92	
f_p	0.85 From HCM 2010 Text/Table, unfan	niliar drivers
PHF_R	#DIV/0!	
PHF_F	0.86	

HV%		HV%	0.18	
E _T		E _T	1.5	
V_R		V_{F}	573	
V_{existing}		V_{existing}	305	
V_{P15}		V_{P15}	89	
L_D	70			
P_{FD}	1	From Table	13-7 HCM	2010
N	2			

Departure Exit Ramp to Service Rd or SCT/RT1A Scenario: No-Build/No-Action (existing parking freeze remains)

D	5	
V ₁₂	#DIV/0!	
\mathbf{v}_{R}	#DIV/0!	
V_{F}	560	
f_{hvR}	1.00	
f_{hvF}	0.92	
r	0.05 5	SN 4 2040 To 1/Tol

 $\rm f_p$ 0.85 From HCM 2010 Text/Table, unfamiliar drivers

 $\begin{array}{ll} \mathsf{PHF}_\mathsf{R} & \mathsf{\#DIV/0!} \\ \mathsf{PHF}_\mathsf{F} & 0.90 \end{array}$

HV%		HV%	0.18	
E_T		E _T	1.5	
V_R		V_{F}	392	
V_{existing}		V_{existing}	194	
V_{P15}		V_{P15}	54	
L_D	85			
P_{FD}	1	From Table	2 13-7 HCM	2010
N	2			

Diverge_5

Arrival Entrance Ramp from TAR

Scenario: No-Build/No-Action (existing parking freeze remains)

D	18	
V ₁₂	1949	
v ₁₂ v _R	820	
v _F	1949	
$f_{h\nu R}$	0.97	
f_{hvF}	0.99	
f_p	0.85	From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.91	
PHF_F	0.92	

Knowns:

HV%	0.06	HV%	0.02
E_T	1.5	E _T	1.5
V_R	614	V_{F}	1509
V_{existing}	483	V_{existing}	1215
V_{P15}	133	V_{P15}	330
L_D	330		

 P_{FD} 1 From Table 13-7 HCM 2010

Arrival Curbside Exit to Service Rd or TWT/SCT/RT1A

Scenario: No-Build/No-Action (existing parking freeze remains)

50
1565
173
425
145
822
0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.95 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09	
E _T	1.5	
V_{FF}	133	See Diagram with Hand Calcs
V_{FR}	327	
V_{RF}	112	
V_{RR}	633	
N	2	
S	16	
V_{existing}	621	
V_{P15}	164	

Departure TAR Between Terminal C merge and Temrinal E diverge Scenario: No-Build/No-Action (existing parking freeze remains)

D	31
v_t	2027
V_{FF}	654
V_{FR}	784
V_{RF}	515
V_{RR}	74
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.85 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09
E _T	1.5
V_{FF}	454
V_{FR}	544
V_{RF}	357
V_{RR}	51
N	3
S	21
V_{existing}	1105
V_{P15}	324

Arrival TAR between Terminal C merge and Terminal E diverge Scenario: No-Build/No-Action (existing parking freeze remains)

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.96 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.04
E_T	1.5
V_{FF}	882
V_{FR}	591
V_{RF}	628
V_{RR}	23
N	3
S	19
V_{existing}	1698
V_{P15}	443

Merge_11

Departure and Arrival to Exit Ramp

Scenario: No-Build/No-Action (existing parking freeze remains)

D	19
V ₁₂	1126
v _R	746
V_{F}	1126
f_{hvR}	0.99
f_{hvF}	0.96
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.76
PHF_F	0.95

Knowns:

HV%	0.02	HV%	0.09	
E_T	1.5	E _T	1.5	
V_R	480	V_{F}	866	
V_{existing}	110	V_{existing}	620	
V_{P15}	36	V_{P15}	164	
L_A	165			
			40	

Service Road to Terminal E to Exit Ramp

Scenario: No-Build/No-Action (existing parking freeze remains)

D	15
V ₁₂	820
v _R	439
V_{F}	820
f_{hvR}	0.84
f_{hvF}	0.96
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.72
PHF_F	0.95

Knowns:

HV%	0.39	HV%	0.09	
E_T	1.5	E _T	1.5	
V_R	224	V_{F}	631	
V_{existing}	158	V_{existing}	621	
V_{P15}	55	V_{P15}	164	
L_A	0			
D	4	Consum Talala	42 7 11014	20

Merge_13

Arrival Exit merge to exit to TWT/SCT/Rt1A or TAR Scenario: No-Build/No-Action (existing parking freeze remains)

D	37	
V ₁₂	2751	
v _R	1522	
V _F	2751	
f_{hvR}	0.84	
f_{hvF}	0.99	
f_p	0.85 From HCM 2010 Text/Table, unfamiliar dri	vers
PHF_R	0.95	
PHF_F	0.92	

Knowns:

HV%	0.39	HV%	0.02
E_T	1.5	E _T	1.5
V_R	1030	V_{F}	2131
V_{existing}	731	V_{existing}	1215
V_{P15}	192	V_{P15}	330
$L_{\scriptscriptstyle\Delta}$	175		

 P_{FD} 1 From Table 13-7 HCM 2010

	*	→	74	~	←	*_	\	\mathbf{x}	4	•	×	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					ĵ.					*	4	
Volume (vph)	0	0	0	0	55	160	0	0	0	805	300	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25			25		
Satd. Flow (prot)	0	0	0	0	1036	0	0	0	0	1681	1729	0
Flt Permitted										0.950	0.977	
Satd. Flow (perm)	0	0	0	0	1036	0	0	0	0	1681	1729	0
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		474			518			525			453	
Travel Time (s)		10.8			11.8			11.9			10.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.62	0.62	0.62	0.92	0.92	0.92	0.91	0.91	0.91
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	65%	65%	65%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)										32%		
Lane Group Flow (vph)	0	0	0	0	347	0	0	0	0	602	613	0
Sign Control		Stop			Stop			Stop			Free	
Intersection Summary												
Area Type:	Other											
Control Type: Unsignalized												
Intersection Capacity Utilizat	tion 49.6%			IC	U Level o	Service A	1					
Analysis Period (min) 15												
, , , , , , , , , , , , , , , , , , , ,												

nt Delay, s/veh	4.3											
,,	****											
Novement	EBI		EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
ol, veh/h	(0	0	0	55	160	0	0	0	805	300	0
onflicting Peds, #/hr	(0	0	0	0	0	0	0	0	0	0	0
ign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized			None	-	-	None	-	-	None	-	-	None
torage Length			-	-	-	-	-	-	-	0	-	-
eh in Median Storage, #		- 0	-	-	0	-	-	0	-	-	0	-
rade, %		- 0	-	-	0	-	-	0	-	-	0	-
eak Hour Factor	92	2 92	92	62	62	62	92	92	92	91	91	91
eavy Vehicles, %	2	2 2	2	65	65	65	2	2	2	2	2	2
1vmt Flow	(0 0	0	0	89	258	0	0	0	885	330	0
ajor/Minor				Minor2						Major2		
Conflicting Flow All				2099	2099	330				0	0	0
Stage 1				2099	2099	-				-	-	-
Stage 2				0	0					-		-
ritical Hdwy				7.75	7.15	6.85				-	-	-
ritical Hdwy Stg 1				6.75	6.15	-				_	_	_
ritical Hdwy Stg 2				-	-							-
ollow-up Hdwy				4.085	4.585	3.885				-	-	-
ot Cap-1 Maneuver				25	~ 35	588				-		-
Stage 1				45	~ 62	-					-	-
Stage 2				-	-	-				-		-
atoon blocked, %											-	-
ov Cap-1 Maneuver				25	0	588				-	-	-
ov Cap-2 Maneuver				25	0	-				-	-	-
Stage 1				45	0	-				-	-	-
Stage 2				-	0	-				-	-	-
proach				WB						NW		
CM Control Delay, s				19.5								
CM LOS				C C								
linor Lane/Major Mvmt	NWI	NWT	NWR	WBLn1								
apacity (veh/h)			-	588								
CM Lane V/C Ratio			-	0.59								
CM Control Delay (s)				19.5								
CM Lane LOS				C								
CM 95th %tile Q(veh)				3.8								
				5.0								

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

Diverge_1

Departure Level Entrance from TAR

Scenario: Preferred Alternative (existing parking freeze remains)

D	11
V ₁₂	1145
V _R	773
V_{F}	1145
f_{hvR}	0.94
f_{hvF}	0.98
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.90
PHF_F	0.82

Knowns:

HV%	0.12	HV%	0.05	
E_T	1.5	E _T	1.5	
V_R	560	V_{F}	781	
V_{existing}	437	V_{existing}	668	
V_{P15}	121	V_{P15}	203	
L_D	330			

Departure Exit from Curbside to Route1A/SCT/Service Rd or TWT Scenario: Preferred Alternative (existing parking freeze remains)

D	7
V ₁₂	#DIV/0!
\mathbf{v}_{R}	#DIV/0!
V_{F}	787
f_{hvR}	1.00
f_{hvF}	0.92
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	#DIV/0!
PHF_F	0.86

HV%		HV%	0.18	
E_T		E _T	1.5	
V_R		V_{F}	526	
V_{existing}		V_{existing}	305	
V_{P15}		V_{P15}	89	
L_D	70			
P_{FD}	1	From Table	13-7 HCM	2010
N	2			

Departure Exit Ramp to Service Rd or SCT/RT1A Scenerio: Preferred Alternative (existing parking freeze remains)

D	3
V ₁₂	#DIV/0!
v_R	#DIV/0!
V_{F}	397
f_{hvR}	1.00
f_{hvF}	0.92
f_p	0.85 From HCM 2010 Text/Table, unfamilar drivers
PHF_R	#DIV/0!
PHF_F	0.90

HV%		HV%	0.18	
E _T		E _T	1.5	
V_R		V_{F}	278	
V_{existing}		V_{existing}	194	
V_{P15}		V_{P15}	54	
L_D	85			
P_{FD}	1	From Table	2 13-7 HCM	2010
N	2			

Merge_4

Departure Exit Ramp to TWT Exit Ramp

Scenario: Preferred Alternative (existing parking freeze remains)

D 26 2518 V_{12} 358 \mathbf{v}_{R} 2518 V_{F} f_{hvR} 0.96 f_{hvF} 0.98 f_p 0.85 From HCM 2010 Text/Table, unfamiliar drivers PHF_R 0.76 PHF_{F} 0.82

Knowns:

HV%	0.08	HV%	0.05	Assumed same as TAR at Entrance, no TAR data past Terminals
E_T	1.5	E _T	1.5	
V_R	224	V_{F}	1718	
V_{existing}	110	V_{existing}	668	
V_{P15}	36	V_{P15}	203	
L۸	250			

Diverge_5

Arrival Entrance Ramp from TAR

Scenario: Preferred Alternative (existing parking freeze remains)

D	18
V ₁₂	1959
\mathbf{v}_{R}	1057
V_{F}	1959
f_{hvR}	0.97
$f_{h\nu F}$	0.99
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.91
PHF_F	0.92

Knowns:

HV%	0.06	HV%	0.02
E_T	1.5	E _T	1.5
V_R	792	V_{F}	1518
V_{existing}	483	V_{existing}	1215
V_{P15}	133	V_{P15}	330
L_D	330		

Arrival Curbside Exit to Service Rd or TWT/SCT/RT1A

Scenario: Preferred Alternative (existing parking freeze remains)

D	42
v_t	1179
V_{FF}	97
V_{FR}	55
V_{RF}	81
V_{RR}	947
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.95 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09	
E_T	1.5	
V_{FF}	75	See Diagram with Hand Calcs
V_{existing}	42	
V_{RF}	62	
V_{RR}	729	
N	2	
S	14	
V_{existing}	621	
V_{P15}	164	

Arrival Exit Ramp to TWT/SCT/Rt1A Exit Ramp

Scenario: Preferred Alternative (existing parking freeze remains)

D	31
V ₁₂	2538
v _R	994
V_{F}	2538
f_{hvR}	0.96
f_{hvF}	0.99
f_p	0.85 From HCM 2010 Text/Table, unfamilar drivers
PHF_R	0.95
PHF_F	0.92

Knowns:

HV%	0.09	HV%	0.02	
E_T	1.5	E _T	1.5	
V_R	765	V_{F}	1966	
V_{existing}	621	V_{existing}	1215	
V_{P15}	164	V_{P15}	330	
L_A	250			

Ramps from Departure and Arrival to Service Rd Scenario: Preferred Alternative (existing parking freeze remains)

D	6
.,	242
V ₁₂	243
\mathbf{v}_{R}	30
V_{F}	243
f_{hvR}	0.90
f_{hvF}	0.76
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.90
PHF_F	0.87

Knowns:

HV%	0.21	HV%	0.64	
E_T	1.5	E _T	1.5	
V_R	21	V_{F}	136	
V_{existing}	194	V_{existing}	101	
V_{P15}	54	V_{P15}	29	
L_A	250			
D	1	From Toble	12 7 11004	201

Departure TAR between Terminal C merge and Terminal E diverge Scenario: Preferred Alternative (existing parking freeze remains)

D	67
v_t	1914
V_{FF}	641
V_{FR}	734
V_{RF}	466
V_{RR}	74
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.85 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09	
E _T	1.5	
V_{FF}	444	See Diagram with Hand Calcs
V_{existing}	509	
V_{RF}	323	
V_{RR}	51	
N	3	
S	10	
V_{existing}	1105	
V_{P15}	324	

arrival TAR between Terminal C merge and Terminal E diverge Scenario: Preferred Alternative (existing parking freeze remains)

D	55
\mathbf{v}_{t}	2893
V_{FF}	1172
\mathbf{v}_{FR}	963
V_{RF}	729
V_{RR}	29
f_{hv}	0.98

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.96 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.04
E_T	1.5
V_{FF}	936
V_{existing}	769
V_{RF}	582
V_{RR}	23
N	3
S	18
V_{existing}	1698
V_{P15}	443

	*	-	74	~	•	*_	\	\mathbf{x}	4	*	×	4	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR	
Lane Configurations					1 >					ሻ	4		
Volume (vph)	0	0	0	0	40	90	0	0	0	520	25	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			0%			0%		
Storage Length (ft)	0		0	0		0	0		0	0		0	
Storage Lanes	0		0	0		0	0		0	1		0	
Taper Length (ft)	25			25			25			25			
Satd. Flow (prot)	0	0	0	0	1044	0	0	0	0	1681	1692	0	
Flt Permitted										0.950	0.956		
Satd. Flow (perm)	0	0	0	0	1044	0	0	0	0	1681	1692	0	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		474			518			525			453		
Travel Time (s)		10.8			11.8			11.9			10.3		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.92	0.92	0.92	0.62	0.62	0.62	0.92	0.92	0.92	0.91	0.91	0.91	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	2%	65%	65%	65%	2%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Shared Lane Traffic (%)										48%			
Lane Group Flow (vph)	0	0	0	0	210	0	0	0	0	297	301	0	
Sign Control		Stop			Stop			Stop			Free		
Intersection Summary													
Area Type:	Other												
Control Type: Unsignalized													
Intersection Capacity Utilizat	ion 29.4%			IC	U Level o	f Service A	A						
Analysis Period (min) 15													
, , , ,													

ntersection nt Delay, s/veh	2.7													
ni Delay, siven	2.1													
Movement		EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR	
Vol, veh/h		0	0	0	0	40	90	0	0	0	520	25	0	
Conflicting Peds, #/hr		0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control		Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	
RT Channelized		-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length		-	-	-	-	-	-	-	-	-	0	-		
Veh in Median Storage, #		-	0	-	-	0	-	-	0	-	-	0	-	
Grade, %		-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor		92	92	92	62	62	62	92	92	92	91	91	91	
Heavy Vehicles, %		2	2	2	65	65	65	2	2	2	2	2	2	
Mvmt Flow		0	0	0	0	65	145	0	0	0	571	27	0	
Major/Minor					Minor2						Major2			
Conflicting Flow All					1170	1170	27				0	0	0	
Stage 1					1170	1170	-				-	-	-	
Stage 2					0	0	-				-	-	-	
Critical Hdwy					7.75	7.15	6.85				-	-	-	
Critical Hdwy Stg 1					6.75	6.15	-				-	-	-	
Critical Hdwy Stg 2					-	-	-				-	-	-	
Follow-up Hdwy					4.085	4.585	3.885				-	-	-	
Pot Cap-1 Maneuver					128	148	893				-	-	-	
Stage 1					178	205	-				-	-	-	
Stage 2					-	-	-				-	-	-	
Platoon blocked, %												-	-	
Mov Cap-1 Maneuver					128	0	893				-	-	-	
Mov Cap-2 Maneuver					128	0	-				-	-	-	
Stage 1					178	0	-				-	-	-	
Stage 2					-	0	-				-	-	-	
Approach					WB						NW			
HCM Control Delay, s					10.3									
HCM LOS					В									
Minor Lane/Major Mvmt		NWL	NWT	NWR	WBLn1									
					002									

Diverge_1

Departure Level Entrance from TAR

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	11
V ₁₂	1119
v_R	776
V_{F}	1119
$f_{h\nu R}$	0.94
$f_{h\nu F}$	0.98
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.90
PHF_F	0.82

Knowns:

0.12	HV%	0.05	
1.5	E _T	1.5	
561	V_{F}	764	
437	V_{existing}	668	
121	V_{P15}	203	
330			
	1.5 561 437 121	0.12 HV% 1.5 E _T 561 V _F 437 V _{existing} 121 V _{P15} 330	1.5 E _T 1.5 561 V _F 764 437 V _{existing} 668 121 V _{P15} 203

1 From Table 13-7 HCM 2010 P_{FD}

Departure Exit from Curbside to TWT or Service Rd/SCT/Rt1A Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	10	
V ₁₂	#DIV/0!	
V _R	#DIV/0!	
V_{F}	1159	
f_{hvR}	1.00	
f_{hvF}	0.92	
f_p	0.85	From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	#DIV/0!	
PHF_{F}	0.86	

HV%		HV%	0.18	
E_T		E _T	1.5	
V_R		V_{F}	774	
V_{existing}		V_{existing}	305	
V_{P15}		V_{P15}	89	
L_D	70			
P_{FD}	1	From Table	13-7 HCM	2010
N	2			

Departure Exit Ramp to Service Rd or SCT/RT1A

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D 5

#DIV/0! V_{12} #DIV/0! \mathbf{v}_{R} 554 V_{F} $f_{h\nu R} \\$ 1.00 f_{hvF} 0.92

 f_p 0.85 From HCM 2010 Text/Table, unfamiliar drivers

 PHF_R #DIV/0! PHF_{F} 0.90

Knowns:

HV%		HV%	0.18
E_T		E _T	1.5
V_R		V_{F}	388
V_{existing}		V_{existing}	194
V_{P15}		V_{P15}	54
L	85		

LD

1 From Table 13-7 HCM 2010 P_{FD}

Ν 2

Merge_4

Departure Exit Ramp to TWT Exit Ramp

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D 28 2490 V_{12} 572 \mathbf{v}_{R} 2490 V_{F} f_{hvR} 0.96 f_{hvF} 0.98 f_p 0.85 From HCM 2010 Text/Table, unfamiliar drivers PHF_R 0.76 PHF_{F} 0.82

Knowns:

HV%	0.08	HV%	0.05	Assumed same as TAR at Entrance, no TAR data past Terminals
E_T	1.5	E _T	1.5	
V_R	357	V_{F}	1699	
V_{existing}	110	V_{existing}	668	
V_{P15}	36	V_{P15}	203	
L_A	250			

Diverge_5

Arrival Entrance Ramp from TAR

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	18	
V_{12}	1923	
\mathbf{v}_{R}	903	
V_{F}	1923	
f_{hvR}	0.97	
f_{hvF}	0.99	
f_p	0.85 From I	HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.91	
PHF_F	0.92	

Knowns:

HV%	0.06	HV%	0.02	
E_T	1.5	E _T	1.5	
V_R	677	V_{F}	1489	
V_{existing}	483	V_{existing}	1215	
V_{P15}	133	V_{P15}	330	
L_D	330			

Arrival Curbside Exit to Service Rd or TWT/SCT/RT1A

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	34
\mathbf{v}_{t}	1179
V_{FF}	97
V_{FR}	55
V_{RF}	81
V_{RR}	947
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.95 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09	
E_T	1.5	
V_{FF}	75	See Diagram with Hand Calcs
V_{FR}	42	
V_{RF}	62	
V_{RR}	729	
N	2	
S	17	
V_{existing}	621	
V_{P15}	164	

Arrival Exit Ramp to TWT/SCT/Rt1A Exit Ramp

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	27
V ₁₂	2386
\mathbf{v}_{R}	571
V_{F}	2386
f_{hvR}	0.96
f_{hvF}	0.99
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.95
PHF_F	0.92

Knowns:

HV%	0.09	HV%	0.02	
E_T	1.5	E _T	1.5	
V_R	440	V_{F}	1848	
V_{existing}	621	V_{existing}	1215	
V_{P15}	164	V_{P15}	330	
L_A	250			

Ramps from Departure and Arrival to Service Rd

Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	6
V ₁₂	231
\mathbf{v}_{R}	34
V_{F}	231
f_{hvR}	0.90
f_{hvF}	0.76
f_p	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF_R	0.90
PHF_F	0.87

Knowns:

HV%	0.21	HV%	0.64	
E_T	1.5	E _T	1.5	
V_R	23	V_{F}	130	
V_{existing}	194	V_{existing}	101	
V_{P15}	54	V_{P15}	29	
L_A	250			
D	1	Fuena Tabla	12 7 11004	201

Departure TAR between Terminal C merge and Terminal E diverge Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	75
\mathbf{v}_{t}	1890
V_{FF}	599
\mathbf{v}_{FR}	736
V_{RF}	481
V_{RR}	74
f_{hv}	0.96

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.85 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.09
E_T	1.5
V_{FF}	416
V_{FR}	510
V_{RF}	334
V_{RR}	51
N	3
S	8
V_{existing}	1105
V_{P15}	324

Arrival TAR between Terminal C merge and Terminal E diverge Scenario: Preferred Alternative (additional 5,000 on-Airport parking spaces)

D	45
v_t	2713
V _{FF}	1210
V_{FR}	819
V_{RF}	655
v_{RR}	29
f_{hv}	0.98

 f_{p} 0.85 From HCM 2010 Text/Table, unfamiliar drivers

PHF 0.96 Previously Calced from Terminal E Entrance and C-E Connector Roadway

HV%	0.04
E _T	1.5
V_{FF}	966
V_{FR}	654
V_{RF}	523
V_{RR}	23
N	3
S	20
V_{existing}	1698
V_{P15}	443

	*	-	-	~	—	*_	\	×	4	*	×	4	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR	
Lane Configurations					1 >					ሻ	4		
Volume (vph)	0	0	0	0	40	90	0	0	0	285	25	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			0%			0%		
Storage Length (ft)	0		0	0		0	0		0	0		0	
Storage Lanes	0		0	0		0	0		0	1		0	
Taper Length (ft)	25			25			25			25			
Satd. Flow (prot)	0	0	0	0	1044	0	0	0	0	1681	1699	0	
Flt Permitted										0.950	0.960		
Satd. Flow (perm)	0	0	0	0	1044	0	0	0	0	1681	1699	0	
Link Speed (mph)		30			30			30			30		
Link Distance (ft)		474			518			525			453		
Travel Time (s)		10.8			11.8			11.9			10.3		
Confl. Peds. (#/hr)													
Confl. Bikes (#/hr)													
Peak Hour Factor	0.92	0.92	0.92	0.62	0.62	0.62	0.92	0.92	0.92	0.91	0.91	0.91	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	2%	65%	65%	65%	2%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0	
Parking (#/hr)													
Mid-Block Traffic (%)		0%			0%			0%			0%		
Shared Lane Traffic (%)										46%			
Lane Group Flow (vph)	0	0	0	0	210	0	0	0	0	169	171	0	
Sign Control		Stop			Stop			Stop			Free		
Intersection Summary													
Area Type:	Other		-										
Control Type: Unsignalized													
Intersection Capacity Utilizat	ion 22.9%			IC	U Level o	Service A	A						
Analysis Period (min) 15													

HCM 95th %tile Q(veh)

Intersection Int Delay, s/veh	3.9												
nt Delay, siven	3.7												
Movement	E	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
/ol, veh/h		0	0	0	0	40	90	0	0	0	285	25	0
Conflicting Peds, #/hr		0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	9	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free
RT Channelized		-	-	None	-	-	None	-	-	None	-	-	None
Storage Length			-	-	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #			0	-	-	0	-	-	0		-	0	-
Grade, %		-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor		92	92	92	62	62	62	92	92	92	91	91	91
Heavy Vehicles, %		2	2	2	65	65	65	2	2	2	2	2	2
/lvmt Flow		0	0	0	0	65	145	0	0	0	313	27	0
		-	-	-	Ü			Ü	, and the second	-	3.0	=,	Ů
lajor/Minor					Minor2						Major2		
Conflicting Flow All					654	654	27				0	0	0
Stage 1					654	654	-				-	-	-
Stage 2					0	0	-				-	-	-
ritical Hdwy					7.75	7.15	6.85				-		
ritical Hdwy Stg 1					6.75	6.15	-				-	-	
ritical Hdwy Stg 2					-	-					-		
ollow-up Hdwy					4.085	4.585	3.885				٠	-	-
ot Cap-1 Maneuver					305	316	893				-	-	-
Stage 1					366	379	-				٠	-	-
Stage 2					-	-	-				-	-	-
atoon blocked, %												-	-
ov Cap-1 Maneuver					305	0	893				-	-	-
lov Cap-2 Maneuver					305	0	-				٠	-	-
Stage 1					366	0	-				-	-	-
Stage 2					-	0	-				-	-	-
pproach					WB						NW		
ICM Control Delay, s					10.3								
CM LOS					В								
linor Lane/Major Mvmt	N	IWL	NWT	NWR	WBLn1								
Capacity (veh/h)		-	-	-	893								
ICM Lane V/C Ratio		-	-	-	0.235								
ICM Control Delay (s)		-	-	-	10.3								
CM Lane LOS		-	-	-	В								
ICM 95th %tile O(veh)		_	_	_	0.9								

0.9

Intersection Capacity Analyses

- No-Build/No-Action (existing parking freeze remains)
- Preferred Alternative (existing parking freeze remains)
- Preferred Alternative (additional 5,000 on-Airport spaces)

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Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations Volume (vph)	ሻ 102	↑↑ 630	↑ ↑ 448	142	ኝ 681	↑ ↑ 1022	37	ሻ 39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)	200	0%	0%	0	0	0%	0	
Storage Length (ft) Storage Lanes	200			0	0		0	
Taper Length (ft)	25				25			
Satd. Flow (prot)	1662	3505	3241	0	1728	3556	0	933
FIt Permitted Satd. Flow (perm)	0.950 1662	3505	3241	0	0.950 1728	3556	0	0.950 933
Right Turn on Red	1002	3303	J241	Yes	1720	3330	Yes	733
Satd. Flow (RTOR)			35			6		
Link Speed (mph)		30	30			30		
Link Distance (ft) Travel Time (s)		160 3.6	642 14.6			170 3.9		
Confl. Peds. (#/hr)		3.0	14.0			3.7		
Confl. Bikes (#/hr)								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%) Bus Blockages (#/hr)	5% 0	3% 0	4% 0	18% 0	1% 0	1% 0	1% 0	100%
Parking (#/hr)	U	U	U	U	U	0	- 0	U
Mid-Block Traffic (%)		0%	0%			0%		
Shared Lane Traffic (%)			,			44		
Lane Group Flow (vph)	111 Prot	685	641	0	740 Drot	1151	0	42 Prot
Turn Type Protected Phases	Prot 1	NA 6	NA 2		Prot 3	NA 8		Prot 4
Permitted Phases		0	2		3	0		4
Detector Phase	1	6	2		3	8		4
Switch Phase								
Minimum Initial (s)	6.0	10.0	10.0		10.0	6.0		6.0
Minimum Split (s) Total Split (s)	12.0 12.0	16.0 39.0	27.0 27.0		15.0 59.0	24.0 71.0		12.0 12.0
Total Split (%)	10.9%	35.5%	24.5%		53.6%	64.5%		10.9%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	3.0	3.0	3.0		2.0	3.0		3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s) Lead/Lag	4.0 Lead	4.0	4.0 Lag		3.0 Lag	4.0		4.0 Lead
Lead-Lag Optimize?	Leau		Lay		Ldy			Leau
Recall Mode	None	C-Max	C-Max		None	None		None
Act Effct Green (s)	9.6	40.5	27.0		52.9	61.5		8.0
Actuated g/C Ratio v/c Ratio	0.09 0.77	0.37 0.53	0.25 0.78		0.48	0.56 0.58		0.07 0.63
Control Delay	73.8	35.2	46.7		40.1	16.8		88.2
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	73.8	35.2	46.7		40.1	16.8		88.2
LOS Approach Dolay	E	D	D		D	B 25.0		F
Approach Delay Approach LOS		40.6 D	46.7 D			25.9 C		
Queue Length 50th (ft)	83	255	223		431	227		29
Queue Length 95th (ft)	m#148	267	#333		#643	291		#87
Internal Link Dist (ft)		80	562			90		
Turn Bay Length (ft) Base Capacity (vph)	200	1201	020		070	21/0		/7
Starvation Cap Reductn	144 0	1291 0	820 0		879 0	2168 0		67 0
Spillback Cap Reductn	0	0	0		0	0		0
Storage Cap Reductn	0	0	0		0	0		0
Reduced v/c Ratio	0.77	0.53	0.78		0.84	0.53		0.63
Intersection Summary								
	Other							
Cycle Length: 110								
Actuated Cycle Length: 110								
Offset: 0 (0%), Referenced to	phase 2:WE	BT and 6:E	BT, Start of	of Green				
Natural Cycle: 90 Control Type: Actuated-Coord	linated							
Maximum v/c Ratio: 0.89	iiiaicu							
Intersection Signal Delay: 34.	1			Int	tersection	LOS: C		
Intersection Capacity Utilization	on 77.0%			IC	U Level of	f Service E)	
Analysis Period (min) 15		. 14						
# 95th percentile volume exc			e may be lo	nger.				
Queue shown is maximum Wolume for 95th percentile			unstroam	signal				
Totalio ioi your poroonui	o quodo io ii	notorou by	аролоат	oigi idii				
Splits and Phases: 5: Jeffrie	es Street/Ra	mp S-T &	Transporta	ation Way				
→ ₀₁ ←	ø2 (R)				1	ø4		↑ ø3
12 s 27 s	92 (K)				12 5			59 s
						∱ ø8		
→ø6 (R) •						ıøŏ		

Movement

Volume (vph)

Lane Width

Lane Configurations

Ideal Flow (vphpl)

Total Lost time (s) Lane Util. Factor

Fit Protected
Satd. Flow (prot)
Fit Permitted

Satd. Flow (perm)

Turn Type Protected Phases

Permitted Phases Actuated Green, G (s) Effective Green, g (s) Actuated g/C Ratio Clearance Time (s)

Peak-hour factor, PHF

Adj. Flow (vph) RTOR Reduction (vph) Lane Group Flow (vph) Heavy Vehicles (%) EBL

102

1900

11

4.0

1.00

1.00

0.95

1662

0.95

1662

0.92

111

0

111

5%

Prot

7.6

9.6

0.09

6.0

Vehicle Extension (s)	2.0	2.0	2.0	3.0	3.0	3.0				
Lane Grp Cap (vph)	145	1252	757	831	2026	57				
v/s Ratio Prot	c0.07	0.20	c0.19	c0.43	0.32	c0.05				
v/s Ratio Perm										
v/c Ratio	0.77	0.55	0.81	0.89	0.57	0.74				
Uniform Delay, d1	49.1	28.2	39.9	25.9	15.0	50.7				
Progression Factor	0.91	1.16	1.03	1.00	1.01	1.00				
Incremental Delay, d2	15.4	1.3	8.9	11.7	0.4	38.8				
Delay (s)	60.2	34.2	49.9	37.7	15.5	89.5				
Level of Service	E	С	D	D	В	F				
Approach Delay (s)		37.8	49.9		24.2					
Approach LOS		D	D		С					
Intersection Summary										
HCM 2000 Control Delay			33.1	HCM 2000 L	evel of Se	rvice	С			
HCM 2000 Volume to Capaci	ity ratio		0.84							
Actuated Cycle Length (s)			110.0	Sum of lost	time (s)		15.0			
Intersection Capacity Utilizati	on		77.0%	ICU Level of	Service		D			
Analysis Period (min)			15							
c Critical Lane Group										

t

∱} 1022

1900

12

4.0

0.95

0.99

1.00

3556

1.00

3556

0.92

1111

1148

1%

NA

60.7

62.7

0.57

6.0

WBR

142

1900

12

0.92

154

0

0

18%

681

1900

11

3.0

1.00

1.00

0.95

1728

0.95

1728

0.92

740

0

740

1%

Prot

50.9

52.9

0.48

5.0

WBT

↑1> 448

1900

12

4.0

0.95

0.96

1.00

3241

1.00

3241

0.92

487

27

614

4%

NA

2

23.7

25.7

0.23

6.0

†† 630

1900

12

4.0

0.95

1.00

1.00

3505

1.00

3505

0.92

685

0

685

3%

NA

37.3

39.3

0.36

6.0

•

NEL2

39

13

4.0

1.00

1.00

0.95

933

0.95

933

0.92

42 0

42 100%

Prot

4.8

6.8

0.06

6.0

1900

NBR

37

1900

12

0.92

40

0

0

	۶	-	•	•	←	•	4	†	<i>></i>	-	↓	4		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9	
ane Configurations		4			4		ሻ	f)			4			
Volume (vph)	0	0	129	59	0	51	252	450	34	20	64	29		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)	0	0%	0	0	0%	0	0	0%	0	0	0%	0		
Storage Length (ft) Storage Lanes	0		0	0		0	0		0	0		0		
Taper Length (ft)	25		U	25		U	25		U	25		U		
Satd. Flow (prot)	0	822	0	0	1447	0	902	1826	0	0	1383	0		
Flt Permitted		OZZ			0.747	· ·	0.677	1020			0.889			
Satd. Flow (perm)	0	822	0	0	1109	0	643	1826	0	0	1241	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)		795			109			5			21			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		70			643			331			442			
Travel Time (s)		1.6			14.6			7.5			10.0			
Confl. Peds. (#/hr) Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	140	0	0	119	0	274	526	0	0	124	0		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4		0	8		2	2		,	6		9	
Permitted Phases Detector Phase	4	4		8	8		2	2		6	6			
Switch Phase	4	4		0	0		Z	2		0	0			
Minimum Initial (s)	6.0	6.0		15.0	15.0		6.0	6.0		6.0	6.0		4.0	
Minimum Split (s)	12.0	12.0		21.0	21.0		13.0	13.0		13.0	13.0		26.0	
Total Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0		26.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		32.5%	32.5%		32.5%	32.5%		33%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0		1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0			
Total Lost Time (s)		5.0			5.0		6.0	6.0			6.0			
Lead/Lag Lead-Lag Optimize?														
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None	
Act Effct Green (s)	None	16.0		None	16.0		47.8	47.8		C-IVIAX	47.8		INOTIC	
Actuated g/C Ratio		0.20			0.20		0.60	0.60			0.60			
v/c Ratio		0.17			0.39		0.72	0.48			0.17			
Control Delay		0.5			11.2		26.1	12.8			9.8			
Queue Delay		0.0			0.0		0.0	0.6			0.0			
Total Delay		0.5			11.2		26.1	13.4			9.8			
LOS		A			В		С	В			A			
Approach Delay		0.5			11.2 B			17.7 B			9.8 A			
Approach LOS Queue Length 50th (ft)		A 0			4		73	119			16			
Queue Length 95th (ft)		0			47		m#314	#399			79			
Internal Link Dist (ft)		1			563		111// 511	251			362			
Turn Bay Length (ft)														
Base Capacity (vph)		802			396		383	1093			750			
Starvation Cap Reductn		0			0		0	244			0			
Spillback Cap Reductn		0			0		0	0			0			
Storage Cap Reductn		0			0		0	0			0			
Reduced v/c Ratio		0.17			0.30		0.72	0.62			0.17			
Intersection Summary	Other													
Area Type: Cycle Length: 80	Other													
Actuated Cycle Length: 80														
Offset: 0 (0%), Referenced to	nhase 2·NR	STI and 6.9	SBTI Star	rt of Green	1									
Natural Cycle: 90	pridoc z.rvz	TE and o.	JDTE, Jul	t or Green										
Control Type: Actuated-Coord	dinated													
Maximum v/c Ratio: 0.72														
Intersection Signal Delay: 14.2					tersection									
Intersection Capacity Utilization	on 59.6%			IC	U Level of	Service I	В							
Analysis Period (min) 15														
# 95th percentile volume ex			may be lo	inger.										
Queue shown is maximum			uncter	olan ol										
m Volume for 95th percentil	e queue is n	netered by	upstream	signal.										

12: Frankfort Street & Lovell Road

Splits and Phases:

¶ø2 (R)

#1_{ø9}

	ၨ	-	•	•	←	•	4	†	~	\	↓	1	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4			4		*	₽			4		
Volume (vph)	0	0	129	59	0	51	252	450	34	20	64	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0		
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00		
Frt		0.86			0.94		1.00	0.99			0.97		
Flt Protected		1.00			0.97		0.95	1.00			0.99		
Satd. Flow (prot)		822			1446		902	1827			1384		
Flt Permitted		1.00			0.75		0.68	1.00			0.89		
Satd. Flow (perm)		822			1108		644	1827			1241		
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	140	64	0	55	274	489	37	22	70	32	
RTOR Reduction (vph)	0	112	0	0	87	0	0	2	0	0	9	0	
Lane Group Flow (vph)	0	28	0	0	32	0	274	524	0	0	115	0	
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		15.0			15.0		43.6	43.6			43.6		
Effective Green, g (s)		16.0			16.0		44.6	44.6			44.6		
Actuated g/C Ratio		0.20			0.20		0.56	0.56			0.56		
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0		
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0		
Lane Grp Cap (vph)		164			221		359	1018			691		
v/s Ratio Prot		c0.03						0.29					
v/s Ratio Perm					0.03		c0.43				0.09		
v/c Ratio		0.17			0.14		0.76	0.51			0.17		
Uniform Delay, d1		26.5			26.4		13.6	11.0			8.6		
Progression Factor		1.00			1.00		0.86	0.86			1.00		
Incremental Delay, d2		0.2			0.3		12.0	1.5			0.5		
Delay (s)		26.7			26.7		23.7	11.0			9.1		
Level of Service		С			С		С	В			Α		
Approach Delay (s)		26.7			26.7			15.3			9.1		
Approach LOS		С			С			В			Α		
Intersection Summary													
HCM 2000 Control Delay			17.2	HO	CM 2000 L	evel of Se	ervice		В				
HCM 2000 Volume to Capacity ra	tio		0.57										
Actuated Cycle Length (s)			80.0	Sı	ım of lost t	ime (s)			15.0				
Intersection Capacity Utilization			59.6%	IC	U Level of	Service			В				
Analysis Period (min)			15										

	-	•	←	4	7	*	>	ļ	4	
Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	† †	7	4	1,1	Ž.			41	7	
Volume (vph)	467	281	8	731	39	359	20	451	467	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft) Grade (%)	12 0%	11	12 0%	11	12	13	12	12 0%	11	
Storage Length (ft)	U70	200	U70	300	0		0	U70	0	
Storage Lanes		1		2	1		0		1	
Taper Length (ft)				25			25			
Satd. Flow (prot)	3282	1487	1776	3164	1264	0	0	3034	1516	
Flt Permitted				0.950				0.998		
Satd. Flow (perm)	3282	1487	1776	3164	1264	0	0	3034	1516	
Right Turn on Red		Yes				Yes			Yes	
Satd. Flow (RTOR)		*40			*95				508	
Link Speed (mph)	30		30					30		
Link Distance (ft)	312		189					283		
Travel Time (s)	7.1		4.3					6.4		
Confl. Peds. (#/hr) Confl. Bikes (#/hr)										
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	100%	5%	7%	7%	100%	20%	80%	16%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	
Parking (#/hr)		U	U	U	U	U	U	U	U	
Mid-Block Traffic (%)	0%		0%					0%		
Shared Lane Traffic (%)	070		070					070		
Lane Group Flow (vph)	508	305	9	795	432	0	0	512	508	
Turn Type	NA	pm+ov	NÁ	Prot	custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2		. 5	3	. 5	9
Permitted Phases		4		2	3		3		3	
Detector Phase	4	4	8	2	2		3	3	3	
Switch Phase										
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0		6.0	6.0	6.0	1.0
Minimum Split (s)	14.0	15.0	14.0	15.0	15.0		13.0	13.0	13.0	34.0
Total Split (s)	16.0	32.0	16.0	32.0	32.0		28.0	28.0	28.0	34.0
Total Split (%)	14.5%	29.1%	14.5%	29.1%	29.1%		25.5%	25.5%	25.5%	31%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	2.0
All-Red Time (s)	5.0	4.0	5.0	4.0	4.0		4.0	4.0	4.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0	
Lead/Lag		Lead		Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?	Name	C MAIn	None	C 14:-	C Malin		Yes	Yes	Yes	None
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effet Green (s)	26.6	64.2 0.58	26.6	31.5	58.8 0.53			22.2 0.20	20.2	
Actuated g/C Ratio v/c Ratio	0.24 0.64	0.58	0.24	0.29 0.88	0.53			0.20	0.18 0.73	
Control Delay	45.3	16.7	43.5	50.9	18.2			52.8	6.8	
Queue Delay	45.3	0.0	43.5 0.0	0.0	0.0			0.0	0.0	
Total Delay	45.3	16.7	43.5	50.9	18.2			52.8	6.8	
LOS	45.3 D	16.7 B	43.5 D	50.9 D	18.2 B			52.8 D	6.8 A	
Approach Delay	34.6	D	43.5	D	D			29.9	М	
Approach LOS	34.0 C		43.3 D					29.9 C		
Queue Length 50th (ft)	162	68	5	282	159			129	0	
Queue Length 95th (ft)	m#390	m227	22	m#418	m209			123	0	
Internal Link Dist (ft)	232	111441	109	11111 7 10	111207			203	U	
Turn Bay Length (ft)	232	200	107	300				203		
Base Capacity (vph)	794	883	430	906	719			634	700	
Starvation Cap Reductn	0	0	0	0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	
Storage Cap Reductn	0	0	0	0	0			0	0	
Reduced v/c Ratio	0.64	0.35	0.02	0.88	0.60			0.81	0.73	
Intersection Summary	Othor									
Area Type:	Other									
Cycle Length: 110 Actuated Cycle Length: 110										
Offset: 0 (0%), Referenced to	nhaco 2.NID	Start of	Green							
Natural Cycle: 110	priase ZINB	L, SIAIT OI	GIEEH							
Control Type: Actuated-Coor	dinated									
Maximum v/c Ratio: 0.88	a iaiou									
Intersection Signal Delay: 35	.0			Ir	ntersection	LOS: C				
Intersection Capacity Utilizati					CU Level of					
Analysis Period (min) 15										

Intersection Signal Delay: 35.0 Intersection Capacity Utilization 68.9% Analysis Period (min) 15 * User Entered Value

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.

17: Transportation Way/SR-14 #10 & Porter St/Ramp S-A & Ramp S-D Splits and Phases:



	→	•	←	4	7	~	>	ļ	4
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	^	7	4	ሻሻ	Ž.			414	1
Volume (vph)	467	281	8	731	39	359	20	451	467
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	13	12	12	11
Total Lost time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.95	1.00
Frt	1.00	0.85	1.00	1.00	0.85			1.00	0.85
Flt Protected	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	3282	1487	1776	3164	1264			3033	1516
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	3282	1487	1776	3164	1264			3033	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
	508	305		795	42	390	22	490	508
Adj. Flow (vph)			9						
RTOR Reduction (vph)	0	19	0	0	50	0	0	0	415
Lane Group Flow (vph)	508	286	9	795	382	0	0	512	93
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm
Protected Phases	4	2	8	2	2			3	
Permitted Phases		4		2	3		3		3
Actuated Green, G (s)	24.6	52.4	24.6	27.8	48.0			20.2	20.2
Effective Green, g (s)	26.6	56.4	26.6	29.8	52.0			22.2	20.2
Actuated g/C Ratio	0.24	0.51	0.24	0.27	0.47			0.20	0.18
Clearance Time (s)	8.0	7.0	8.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	793	762	429	857	654			612	278
v/s Ratio Prot	c0.15	0.10	0.01	c0.25	0.16			0.2	2.3
v/s Ratio Perm	00.70	0.09	0.01	00.20	0.14			0.17	0.06
v/c Ratio	0.64	0.07	0.02	0.93	0.14			0.17	0.34
Uniform Delay, d1	37.4	16.2	31.8	39.1	21.1			42.2	39.1
Progression Factor	0.99	1.05	1.00	1.16	1.14			0.95	0.00
Incremental Delay, d2	1.3	0.1	0.0	11.2	0.5			9.3	0.00
	38.3	17.1	31.8	56.6	24.7			49.5	0.3
Delay (s)	38.3 D	17.1 B							
Level of Service		В	C	E	С			D	Α
Approach Delay (s)	30.3		31.8					25.0	
Approach LOS	С		С					С	
Intersection Summary									
HCM 2000 Control Delay			34.6	Н	CM 2000 L	evel of Se	ervice		С
HCM 2000 Volume to Capacit	tv ratio		0.69						
Actuated Cycle Length (s)	,		110.0	S	um of lost	time (s)			19.0
Intersection Capacity Utilization	n		68.9%		CU Level of				C
Analysis Period (min)			15		DO LOVOI O	2011100			- 3
c Critical Lane Group			13						
c Gillical Earle Group									

	_≉	-	7	*	←	٤	•	×	/	Ĺ	×	~		
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3	
ane Configurations	*	∱ 1≽			414						414	7		
olume (vph)	229	91	345	4	141	192	0	0	0	148	558	450		
leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
ane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
rade (%)		0%		_	0%	_	_	0%		_	0%			
torage Length (ft)	250		0	0		0	0		0	0		150		
torage Lanes	1		0	0		0	0		0	0		1		
aper Length (ft) atd. Flow (prot)	25 1770	3001	0	25 0	2771	0	25 0	0	0	25 0	3352	1583		
It Permitted	0.950	3001	U	U	0.950	U	U	U	U	U	0.990	1303		
atd. Flow (perm)	1770	3001	0	0	2635	0	0	0	0	0	3352	1583		
ight Turn on Red	1770	3001	Yes		2000	Yes	- U	U	Yes		333 <u>2</u>	Yes		
atd. Flow (RTOR)		*60	103		209	103			103			489		
ink Speed (mph)		30			30			30			30	107		
nk Distance (ft)		430			1019			522			475			
ravel Time (s)		9.8			23.2			11.9			10.8			
onfl. Peds. (#/hr)														
onfl. Bikes (#/hr)														
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
rowth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
eavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%		
us Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
arking (#/hr)		00:			00:			00:			200			
lid-Block Traffic (%)		0%			0%			0%			0%			
hared Lane Traffic (%)	240	171	0		2//	0		0			7/0	400		
ane Group Flow (vph)	249 Prot	474 NA	0	0 Dorm	366	0	0	0	0	0 Split	768	489		
urn Type rotected Phases	Prot 1	NA 6		Perm	NA 2					Split 4	NA 4	pm+ov 1	3	
rotected Phases ermitted Phases		0		2	2					4	4	4	3	
etector Phases	1	6		2	2					4	4	1		
witch Phase	'	U		2	2					4	7			
linimum Initial (s)	6.0	10.0		10.0	10.0					6.0	6.0	6.0	1.0	
linimum Split (s)	13.0	17.0		17.0	17.0					13.0	13.0	13.0	27.0	
otal Split (s)	27.0	48.0		21.0	21.0					35.0	35.0	27.0	27.0	
otal Split (%)	24.5%	43.6%		19.1%	19.1%					31.8%	31.8%	24.5%	25%	
ellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	
II-Red Time (s)	4.0	4.0		4.0	4.0					3.0	3.0	4.0	0.0	
ost Time Adjust (s)	-2.0	-2.0			-2.0						-2.0	-2.0		
otal Lost Time (s)	5.0	5.0			5.0						4.0	5.0		
ead/Lag	Lead			Lag	Lag					Lag	Lag	Lead	Lead	
ead-Lag Optimize?				_						Yes	Yes		Yes	
ecall Mode	None	C-Max		C-Max	C-Max					None	None	None	None	
ct Effct Green (s)	19.9	60.7			35.8						29.5	53.4		
ctuated g/C Ratio	0.18	0.55			0.33						0.27	0.49		
c Ratio	0.78	0.28			0.37						0.86	0.48		
ontrol Delay	65.6	24.4			16.6						48.6	3.0		
ueue Delay	0.0	0.0			0.0						0.0	0.0		
otal Delay	65.6	24.4			16.6						48.6	3.0		
OS pproach Delay	E	C 38.6			B 16.6						D 30.8	Α		
pproach LOS		36.0 D			В						30.6 C			
ueue Length 50th (ft)	178	103			37						264	0		
ueue Length 95th (ft)	#267	177			105						341	49		
iternal Link Dist (ft)	11201	350			939			442			395	7/		
urn Bay Length (ft)	250	550			737			112			373	150		
ase Capacity (vph)	354	1683			998						946	1040		
tarvation Cap Reductn	0	0			0						0	0		
pillback Cap Reductn	0	0			0						0	0		
torage Cap Reductn	0	0			0						0	0		
educed v/c Ratio	0.70	0.28			0.37						0.81	0.47		
itersection Summary														
	Other													
ycle Length: 110	Olliei													
ctuated Cycle Length: 110														
Studiou Cycle Length. 110	nhase 2·WF	TL and 6:	FRT Start	of Green										
ffset: 0 (0%) Referenced to r	DIIGGC Z.VVL	TE and o.	LD1, Start	or Green										
ffset: 0 (0%), Referenced to partial Cycle: 90														
atural Cycle: 90	nated													
Iffset: 0 (0%), Referenced to patural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86	nated			In	tersection	LOS: C								
atural Cycle: 90 ontrol Type: Actuated-Coordi						Service B	!							
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86				IC	U Level ດາ	DELVICE I								
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86 itersection Signal Delay: 31.0 itersection Capacity Utilization				IC	U Level of	Service L								
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86 itersection Signal Delay: 31.0				IC	U Level of	Service L								
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86 stersection Signal Delay: 31.0 tlersection Capacity Utilization nalysis Period (min) 15	n 55.3%	ity, queue	may be lo		U Level of	Service L								
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86 latersection Signal Delay: 31.0 stersection Capacity Utilization nalysis Period (min) 15 User Entered Value	n 55.3% eeds capac		may be lo		U Level of	Jervice L								
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86 latersection Signal Delay: 31.0 latersection Capacity Utilization nalysis Period (min) 15 User Entered Value 95th percentile volume exc Queue shown is maximum:	n 55.3% needs capac after two cy	cles.		onger.										
atural Cycle: 90 ontrol Type: Actuated-Coordi laximum v/c Ratio: 0.86 stersection Signal Delay: 31.0 stersection Capacity Utilization nalysis Period (min) 15 User Entered Value 95th percentile volume exc. Queue shown is maximum a blits and Phases: 22: Tomax	n 55.3% eeds capac	cles.		onger.										
atural Cycle: 90 ontrol Type: Actuated-Coordi aximum v/c Ratio: 0.86 tersection Signal Delay: 31.0 tersection Capacity Utilization nalysis Period (min) 15 User Entered Value 95th percentile volume exc. Queue shown is maximum olits and Phases: 22: Toma	n 55.3% needs capac after two cy	cles.	ve & Trans	onger. sportation			/e #10	a3					A	
atural Cycle: 90 ontrol Type: Actuated-Coordi aximum v/c Ratio: 0.86 tersection Signal Delay: 31.0 tersection Capacity Utilization alysis Period (min) 15 User Entered Value 95th percentile volume exc Queue shown is maximum:	n 55.3% needs capac after two cy	cles.	ve & Trans	onger.				ø3				21	o _{p4}	

Movement EBL EBT EBR WBL WBT WBR NEL NET NER SWL SWT SWR
Volume (vph) 229 91 345 4 141 192 0 0 148 558 450 Ideal Flow (vphpl) 1900 <t< th=""></t<>
Volume (vph) 229 91 345 4 141 192 0 0 0 148 558 450 Ideal Flow (vphpl) 1900 1
Ideal Flow (vphpl)
Total Lost time (s) 5.0
Frt 1.00 0.88 0.91 1.00 0.85 Flt Protected 0.95 1.00 1.00 0.99 1.00 Satd. Flow (prot) 1770 3002 2773 3351 1583 Flt Permitted 0.95 1.00 0.99 1.00 Satd. Flow (perm) 1770 3002 2635 3351 1583 Peak-hour factor, PHF 0.92
Fit Protected 0.95 1.00 1.00 1.00 3351 1583 Fit Permitted 0.95 1.00 0.95 1.00 0.95 Satd. Flow (prent) 1770 3002 2773 3351 1583 Fit Permitted 0.95 1.00 0.95
Satd. Flow (prot) 1770 3002 2773 3351 1583 FII Permitted 0.95 1.00 0.95 0.95 0.99 1.00 Satd. Flow (perm) 1770 3002 2635 3351 1583 Peak-hour factor, PHF 0.92 </td
Satd. Flow (prot) 1770 3002 2773 3351 1583 FII Permitted 0.95 1.00 0.95 0.95 0.99 1.00 Satd. Flow (perm) 1770 3002 2635 3351 1583 Peak-hour factor, PHF 0.92 </td
Fit Permitted 0.95 1.00 0.95
Satd. Flow (perm) 1770 3002 2635 3351 1583 Peak-hour factor, PHF 0.92
Adj. Flow (vph) 249 99 375 4 153 209 0 0 0 161 607 489 RTOR Reduction (vph) 0 28 0 0 144 0 0 0 0 0 269 Lane Group Flow (vph) 249 446 0 0 222 0 0 0 0 768 220 Heavy Vehicles (%) 2% 2% 2% 18% 20% 0% 0% 24% 2% 2% Turn Type Prot NA Perm NA Split NA pm+ov Protected Phases 1 6 2 4 4 1
Adj. Flow (vph) 249 99 375 4 153 209 0 0 0 161 607 489 RTOR Reduction (vph) 0 28 0 0 144 0 0 0 0 0 269 Lane Group Flow (vph) 249 446 0 0 222 0 0 0 0 768 220 Heavy Vehicles (%) 2% 21% 2% 2% 18% 20% 0% 0% 24% 2% 2% Turn Type Prot NA Perm NA Split NA pm+ov Protected Phases 1 6 2 4 4 1
RTOR Reduction (vph) 0 28 0 0 144 0 0 0 0 269 Lane Group Flow (vph) 249 446 0 0 222 0 0 0 0 768 220 Heavy Vehicles (%) 2% 21% 2% 2% 18% 20% 0% 0% 0% 24% 2% 2% Turn Type Prot NA Perm NA Split NA pm+ov Protected Phases 1 6 2 4 4 1
Lane Group Flow (vph) 249 446 0 0 222 0 0 0 0 768 220 Heavy Vehicles (%) 2% 21% 2% 2% 18% 20% 0% 0% 0% 2% 2% 2% Turn Type Prot NA Perm NA Split NA pm+ov Protected Phases 1 6 2 4 4 1
Heavy Vehicles (%) 2% 21% 2% 28 18% 20% 0% 0% 24% 2% 2% Turn Type Prot NA Perm NA Split NA pm+ov Protected Phases 1 6 2 4 4 1
Turn Type Prot NA Perm NA Split NA pm+ov Protected Phases 1 6 2 4 4 1
Protected Phases 1 6 2 4 4 1
Permitted Phases 2 4
Actuated Green, G (s) 17.9 56.9 32.0 27.5 45.4
Effective Green, q (s) 19.9 58.9 34.0 29.5 49.4
Enclusive Glean, g (g) 177 357 273 273 273 273 273 273 273 273 273 27
Clearance Time (s) 7.0 7.0 7.0 6.0 7.0
Substitute Initial Conference of the Conference
Lame Gro Cap (vph) 320 1607 814 898 710
Table Up Cap (Up) 320 1007 1019 1019 1019 1019 1019 1019 101
Vis Ratio Firm 0.08 0.08
We Ratio 0.78 0.28 0.27 0.86 0.31
Uniform Delay, d1 42,9 13,9 28.7 38.2 19.4
Foreression Factor 1.14 1.68 1.00 1.00 1.00
Incremental Delay, d2 10.1 0.4 0.8 7.7 0.1
Delay (s) 59.3 23.8 29.5 46.0 19.5
Detay (f) 57.3 2.5 2.7 40.5 17.5 Level of Service E C C D B
Approach Delay (s) 36.0 29.5 0.0 35.7
Approach LOS D C A D
Intersection Summary
HCM 2000 Control Delay 34.8 HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio 0.55
Actuated Cycle Length (s) 110.0 Sum of lost time (s) 17.0
Intersection Capacity Utilization 55.3% ICU Level of Service B
Analysis Period (min) 15

	•	→	•	•	←	•	4	†	~	\	↓	1			
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø3	ø9	
Lane Configurations	*		7	*	1,		ኻ	†			1				
Volume (vph)	85	0	204	170	153	63	389	214	0	0	328	7			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	1700	12	12	1700	12	12	12	12	12	12	12	1700			
Grade (%)	12	0%	12	12	0%	12	12	0%	12	12	0%	12			
Storage Length (ft)	0	070	0	100	070	0	0	070	0	0	070	0			
Storage Lanes	1		1	100		0	1		0	0		0			
Taper Length (ft)	25		- 1	25		U	25		U	25		U			
		0	1417		1.405	0		1//7	0		14/0	0			
Satd. Flow (prot)	1583 0.613	0	1417	1752 0.950	1405	0	1583	1667	0	0	1468	0			
Flt Permitted		0	1417		1.405	0	0.185	1//7	0	0	14/0	0			
Satd. Flow (perm)	1022	0	1417	1752	1405	0	308	1667	0	0	1468	0			
Right Turn on Red			Yes		40	Yes			Yes			Yes			
Satd. Flow (RTOR)			151		18						1				
Link Speed (mph)		30			30			30			30				
Link Distance (ft)		344			1001			716			257				
Travel Time (s)		7.8			22.8			16.3			5.8				
Confl. Peds. (#/hr)															
Confl. Bikes (#/hr)															
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%			
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%			
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0			
Parking (#/hr)															
Mid-Block Traffic (%)		0%			0%			0%			0%				
Shared Lane Traffic (%)															
Lane Group Flow (vph)	92	0	222	185	234	0	423	233	0	0	365	0			
Turn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA				
Protected Phases			3 9	1	6		3 9	8			4		3	9	
Permitted Phases	2		2	6			8								
Detector Phase	2		2	1	6		3	8			4				
Switch Phase															
Minimum Initial (s)	6.0			6.0	6.0			10.0			10.0		6.0	4.0	
Minimum Split (s)	12.0			12.0	12.0			15.5			15.5		11.5	20.0	
Total Split (s)	21.0			12.0	33.0			57.0			21.0		36.0	20.0	
Total Split (%)	19.1%			10.9%	30.0%			51.8%			19.1%		33%	18%	
Yellow Time (s)	3.0			3.0	3.0			4.0			4.0		3.0	2.0	
All-Red Time (s)	3.0			3.0	3.0			1.5			1.5		2.5	1.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0			-1.0			-1.0		2.5	1.0	
Total Lost Time (s)	5.0			5.0	5.0			4.5			4.5				
Lead/Lag	Lag			Lead	5.0			4.5			Lag		Lead		
Lead-Lag Optimize?	Lay			Leau							Lay		Leau		
Recall Mode	None			Mono	None			None			None		None	Mono	
	None 12.1		39.0	None 24.5			43.3				17.0		Mone	None	
Act Effct Green (s)					24.5			40.1							
Actuated g/C Ratio	0.16		0.50	0.32	0.32		0.56	0.52			0.22				
v/c Ratio	0.58		0.28	0.33	0.51		0.80	0.27			1.14				
Control Delay	48.4		4.2	24.5	26.6		27.4	13.6			125.2				
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0			0.0				
Total Delay	48.4		4.2	24.5	26.6		27.4	13.6			125.2				
LOS	D		Α	С	С		С	В			F				
Approach Delay					25.7			22.5			125.2				
Approach LOS					С			С			F				
Queue Length 50th (ft)	40		16	65	80		136	53			~204				
Queue Length 95th (ft)	#109		46	155	195		250	157			#502				
Internal Link Dist (ft)		264			921			636			177				
Turn Bay Length (ft)				100											
Base Capacity (vph)	216		769	553	532		756	1160			321				
Starvation Cap Reductn	0		0	0	0		0	0			0				
Spillback Cap Reductn	0		0	0	0		0	0			0				
Storage Cap Reductn	0		0	0	0		0	0			0				
Reduced v/c Ratio	0.43		0.29	0.33	0.44		0.56	0.20			1.14				

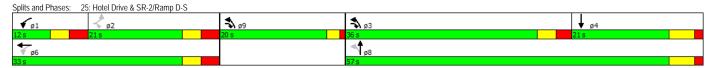
Area Type: Other

Cycle Length: 110
Actuated Cycle Length: 77.5

Intersection LOS: D ICU Level of Service C

Actuated Cycle Length: 77.5
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 43.7
Intersection Capacity Utilization 70.8%
Analysis Period (min) 15
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.



	•	-	•	•	←	•	•	†	/	-	↓	4		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations	*		7	*	1		*	†			1>			
Volume (vph)	85	0	204	170	153	63	389	214	0	0	328	7		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	5.0		4.5	5.0	5.0		4.5	4.5			4.5			
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00			
Frt	1.00		0.85	1.00	0.96		1.00	1.00			1.00			
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00			
Satd. Flow (prot)	1583		1417	1752	1406		1583	1667			1469			
Flt Permitted	0.61		1.00	0.95	1.00		0.19	1.00			1.00			
Satd. Flow (perm)	1021		1417	1752	1406		309	1667			1469			
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)	92	0	222	185	166	68	423	233	0	0	357	8		
RTOR Reduction (vph)	0	0	86	0	12	0	0	0	0	0	1	0		
Lane Group Flow (vph)	92	0	136	185	222	0	423	233	0	0	364	0		
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%		
Turn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA			
Protected Phases			3 9	1	6		3 9	8			4			
Permitted Phases	2		2	6			8							
Actuated Green, G (s)	11.2		34.4	23.4	23.4		44.8	39.1			16.1			
Effective Green, g (s)	12.2		34.4	24.4	24.4		43.8	40.1			17.1			
Actuated g/C Ratio	0.15		0.43	0.31	0.31		0.55	0.50			0.21			
Clearance Time (s)	6.0			6.0	6.0			5.5			5.5			
Vehicle Extension (s)	2.0			2.0	2.0			2.0			2.0			
Lane Grp Cap (vph)	156		611	536	430		524	838			315			
v/s Ratio Prot			0.06	0.03	c0.16		c0.22	0.14			c0.25			
v/s Ratio Perm	0.09		0.03	0.07			0.22							
v/c Ratio	0.59		0.22	0.35	0.52		0.81	0.28			1.16			
Uniform Delay, d1	31.4		14.2	21.4	22.8		17.1	11.4			31.3			
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00			
Incremental Delay, d2	3.6		0.1	0.1	0.4		8.4	0.1			100.0			
Delay (s)	35.1		14.3	21.6	23.2		25.5	11.5			131.3			
Level of Service	D		В	С	С		С	В			F			
Approach Delay (s)		20.4			22.5			20.5			131.3			
Approach LOS		С			С			С			F			
Intersection Summary														
HCM 2000 Control Delay			44.0	H	CM 2000 L	evel of S	ervice		D					
HCM 2000 Volume to Capaci	ty ratio		0.88											
Actuated Cycle Length (s)			79.7	St	um of lost	time (s)			22.0					
Intersection Capacity Utilization	on		70.8%	IC	U Level of	Service			С					
Analysis Period (min)			15											

Splits and Phases: 27: Hotel Drive & TWT Off-Ramp/Airport Way



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		ની	7	7		7		† }			414		
Volume (vph)	237	52	585	154	0	112	0	255	306	127	575	0	
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		4.0			4.0		
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95		
Frt		1.00	0.85	1.00		0.85		0.92			1.00		
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99		
Satd. Flow (prot)		1557	1468	1480		1369		2760			3065		
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.68		
Satd. Flow (perm)		1557	1468	1480		1369		2760			2088		
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)	258	57	636	167	0	122	0	277	333	138	625	0	
RTOR Reduction (vph)	0	0	381	0	0	101	0	197	0	0	0	0	
Lane Group Flow (vph)	0	315	255	167	0	21	0	413	0	0	763	0	
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%	
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA		
Protected Phases	4	4	4	3		3		1			1		
Permitted Phases										1			
Actuated Green, G (s)		12.2	12.2	11.1		11.1		27.4			27.4		
Effective Green, g (s)		13.2	13.2	12.1		12.1		29.4			29.4		
Actuated g/C Ratio		0.18	0.18	0.17		0.17		0.41			0.41		
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0		
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0		
Lane Grp Cap (vph)		285	269	249		230		1128			853		
v/s Ratio Prot		c0.20	0.17	c0.11		0.02		0.15					
v/s Ratio Perm											c0.37		
v/c Ratio		1.11	0.95	0.67		0.09		0.37			0.89		
Uniform Delay, d1		29.4	29.0	28.0		25.2		14.8			19.8		
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00		
Incremental Delay, d2		84.5	39.9	5.5		0.1		0.2			11.8		
Delay (s)		113.9	68.9	33.5		25.3		15.0			31.6		
Level of Service		F	Е	С		С		В			С		
Approach Delay (s)		83.8			30.0			15.0			31.6		
Approach LOS		F			С			В			С		
Intersection Summary													
HCM 2000 Control Delay			46.5	HO	CM 2000 L	evel of Se	rvice		D				
HCM 2000 Volume to Capacity ra	atio		0.85										
Actuated Cycle Length (s)			71.9		um of lost				14.0				
Intersection Capacity Utilization			74.3%	IC	U Level of	Service			D				
Analysis Period (min)			15										

	٠	•	•	†	↓	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations	Y			<u> </u>	<u>551</u>		
Volume (vph)	298	58	0	438	252	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%	_		0%	0%	_	
Storage Length (ft)	0	0	0			0	
Storage Lanes	1	0	0			0	
Taper Length (ft)	25 1722	0	25 0	1450	1410	0	
Satd. Flow (prot) Flt Permitted	1723 0.960	U	U	1652	1610	U	
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red	1/23	Yes	U	1032	1010	Yes	
Satd. Flow (RTOR)	13	103				.03	
Link Speed (mph)	30			30	30		
Link Distance (ft)	499			417	331		
Travel Time (s)	11.3			9.5	7.5		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr) Mid Plack Traffic (%)	0%			00/	00/		
Mid-Block Traffic (%) Shared Lane Traffic (%)	υ%			0%	0%		
Lane Group Flow (vph)	387	0	0	476	274	0	
Turn Type	Perm	U	0	NA	NA	U	
Protected Phases				1	1		2
Permitted Phases	3						
Detector Phase	3			1	1		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		4.0
Minimum Split (s)	13.0			13.0	13.0		19.0
Total Split (s)	30.0			30.0	30.0		20.0
Total Split (%)	37.5%			37.5%	37.5%		25%
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0 -1.0			2.0 -1.0	2.0		1.0
Lost Time Adjust (s) Total Lost Time (s)	4.0			4.0	-1.0 4.0		
Lead/Lag	4.0			Lead	Lead		Lag
Lead-Lag Optimize?				Yes	Yes		Yes
Recall Mode	None			C-Max	C-Max		None
Act Effct Green (s)	22.0			46.2	46.2		
Actuated g/C Ratio	0.28			0.58	0.58		
v/c Ratio	0.80			0.50	0.29		
Control Delay	38.5			16.9	11.4		
Queue Delay	0.3			0.0	0.3		
Total Delay	38.8			16.9	11.7		
LOS	D			В	В		
Approach Delay	38.8			16.9	11.7		
Approach LOS	D			B	В		
Queue Length 50th (ft)	171			115	46		
Queue Length 95th (ft)	252			#398	185		
Internal Link Dist (ft)	419			337	251		
Turn Bay Length (ft) Base Capacity (vph)	572			953	929		
Starvation Cap Reductn	0			953	929 255		
Spillback Cap Reductn	20			21	255 0		
Storage Cap Reductin	0			0	0		
Reduced v/c Ratio	0.70			0.51	0.41		
	0.70			5.0.			
Intersection Summary	Other						
Area Type:	Other						
Cycle Length: 80 Actuated Cycle Length: 80							
	to phace 1.A	IRCR C+^	rt of Cross	n			
Offset: 79 (99%), Referenced	ιο pnase 1:N	nd2R' 2[g	птоготее	11			
Natural Cycle: 65 Control Type: Actuated-Coord	dinated						
Maximum v/c Ratio: 0.80	aniated						
Intersection Signal Delay: 23.	.1			In	tersection	LOS: C	
intersection Signal Delay: 73.					CU Level of		
	1011 77.070						
Intersection Capacity Utilizati	1011 47.070						
Intersection Signal Delay: 23. Intersection Capacity Utilizati Analysis Period (min) 15 # 95th percentile volume ex		city, queue	may be lo	onger.			

Splits and Phases: 33: SR-2/Frankfort Street & Route 1A NB Off-Ramp

	۶	•	1	†	 	4
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥	LDIK	IVDE	<u> </u>	<u> </u>	JBR
Volume (vph)	298	58	0	438	252	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	1700	1700	4.0	4.0	1700
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	1.00	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1723			1652	1610	
Flt Permitted	0.96			1.00	1.00	
Satd. Flow (perm)	1723			1652	1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	63	0.72	476	274	0.72
RTOR Reduction (vph)	9	0	0	0	0	0
Lane Group Flow (vph)	378	0	0	476	274	0
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%
Turn Type	Perm			NA	NA	
Protected Phases				1	1	
Permitted Phases	3					
Actuated Green, G (s)	21.0			42.8	42.8	
Effective Green, g (s)	22.0			43.8	43.8	
Actuated g/C Ratio	0.28			0.55	0.55	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	473			904	881	
v/s Ratio Prot	.,,			c0.29	0.17	
v/s Ratio Perm	c0.22			30.27	0	
v/c Ratio	0.80			0.53	0.31	
Uniform Delay, d1	26.9			11.5	9.9	
Progression Factor	1.00			1.00	0.87	
Incremental Delay, d2	8.5			2.2	0.9	
Delay (s)	35.5			13.7	9.5	
Level of Service	D			В	Α	
Approach Delay (s)	35.5			13.7	9.5	
Approach LOS	D			В	Α	
••						
Intersection Summary			20.1	116	214 2000 1	aval of Condi
HCM 2000 Control Delay	alle cantin		20.1	HC	JIVI 2000 L	evel of Service
HCM 2000 Volume to Capac	сну гатю		0.60	C.	m of loct t	ima (a)
Actuated Cycle Length (s)	tion		49.8%		ım of lost t U Level of	
Intersection Capacity Utilizat	liOH			IC	o revei ot	Service
Analysis Period (min)			15			

	~	₹	*	~	Ĺ	×
Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	*	7	1 >			4
Volume (vph)	77	47	391	69	24	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	200		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1367	1188	1604	0	0	1660
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1367	1188	1604	0	0	1660
Link Speed (mph)	30		30			30
Link Distance (ft)	331		958			417
Travel Time (s)	7.5		21.8			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	32%	36%	18%	5%	38%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	51	500	0	0	337
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized	Ollici					
Intersection Capacity Utilizat	ion 45.8%			IC	III ovol o	f Service A
Analysis Period (min) 15	1011 43.070			IC	O LEVEL U	SCI VICE F
Analysis i chidu (IIIIII) 13						

_	₹	×	~	Ĺ	K
NWI	NWR	NFT	NFR	SWI	SWT
			11211	J.,, L	4
			69	24	286
	47		07		Free
					0%
	0.02		0.02	0.02	0.92
					311
04	31	420	75	20	311
	0				
	8	Mana			Nama
		None			None
0.00					417
	440			500	
826	462			500	
6.7	6.6			4.5	
296	535			902	
NW 1	NE 1	SW 1			
135	500	337			
84	0	26			
51	75	0			
476	1700	902			
0.28	0.29	0.03			
29	0	2			
18.3	0.0	1.0			
С		Α			
	0.0				
C	- 0.0				
_					
		2.0			
		45.8%	IC	U Level of Se	
		15	10	O Level of 36	CIVICE
	NWL 77 Stop 0% 0.92 84 0.93 826 772 6.7 3.8 72 296 NW 1 135 84 476 0.28 29 18.3 C 18.3	NWL NWR 77 47 Stop 0% 0.92 0.92 84 51 8 0.93 826 462 772 462 6.7 6.6 3.8 3.6 72 90 296 535 NW1 NE 1 135 500 84 0 51 75 476 1700 0.28 0.29 29 0 18.3 0.0 C 18.3 0.0	NWL NWR NET 77 47 391 Slop Free 0% 0% 0.92 0.92 0.92 84 51 425 8 None 8 None 0.93 826 462 772 462 6.7 6.6 3.8 3.6 72 90 296 535 NW 1 NE 1 SW 1 135 500 337 84 0 26 51 75 0 476 1700 902 0.28 0.29 0.33 29 0 0 2 18.3 0.0 1.0 C A 18.3 0.0 1.0 C	NWL NWR NET NER 77 47 391 69 Stop Free 0% 0% 00,92 0,92 0,92 84 51 425 75 8 None 8 None 0.93 826 462 772 462 6.7 6.6 3.8 3.6 72 90 296 535 NW1 NE1 SW1 135 500 337 84 0 26 51 75 0 476 1700 902 0.28 0.29 0.03 29 0 2 18.3 0.0 1.0 C A 18.3 0.0 1.0 C A 18.3 0.0 1.0 C	NWL NWR NET NER SWL 77 47 391 69 24 Stop Free 0% 0% 0% 092 0.92 0.92 0.92 0.92 84 51 425 75 26 8 None 8 None 0.93 826 462 500 772 462 500 6.7 6.6 4.5 3.8 3.6 2.5 72 90 97 296 535 902 NW1 NE1 SW1 135 500 337 84 0 26 51 75 0 476 1700 902 0.28 0.29 0.03 29 0 2 18.3 0.0 1.0 C A 18.3 0.0 1.0 C C 2.9

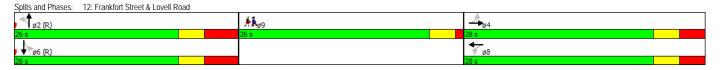
	•	-	←	•	•	†	~	•
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	ሻ	^	∱ĵ≽		ሻ	∱ ⊅		*1
Volume (vph)	63	525	277	86	527	923	33	39
Ideal Flow (vphpl) Lane Width (ft)	1900 11	1900 12	1900 12	1900 12	1900 11	1900 12	1900 12	1900 13
Grade (%)		0%	0%	12		0%	12	13
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25 1662	3505	3247	0	25 1728	3556	0	933
Satd. Flow (prot) Flt Permitted	1662 0.950	3005	3247	U	0.950	2000	U	0.950
Satd. Flow (perm)	1662	3505	3247	0	1728	3556	0	933
Right Turn on Red				Yes			Yes	
Satd. Flow (RTOR)			44			6		
Link Speed (mph)		30	30			30 170		
Link Distance (ft) Travel Time (s)		160 3.6	642 14.6			170 3.9		
Confl. Peds. (#/hr)		3.0	14.0			3.7		
Confl. Bikes (#/hr)								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0
Parking (#/hr) Mid Block Traffic (%)		00/	Λ0/			0%		
Mid-Block Traffic (%) Shared Lane Traffic (%)		0%	0%			υ%		
Lane Group Flow (vph)	68	571	394	0	573	1039	0	42
Turn Type	Prot	NA	NA		Prot	NA	- 0	Prot
Protected Phases	1	6	2		3	8		4
Permitted Phases								
Detector Phase	1	6	2		3	8		4
Switch Phase		10.0	10.0		10.0	/ 0		
Minimum Initial (s)	6.0	10.0	10.0		10.0	6.0		6.0
Minimum Split (s) Total Split (s)	12.0 12.0	16.0 39.0	27.0 27.0		15.0 39.0	24.0 51.0		12.0 12.0
Total Split (%)	13.3%	43.3%	30.0%		43.3%	56.7%		13.3%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	3.0	3.0	3.0		2.0	3.0		3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0		4.0
Lead/Lag	Lead		Lag		Lag			Lead
Lead-Lag Optimize? Recall Mode	None	C-Max	C-Max		None	None		None
Act Effct Green (s)	8.1	41.7	31.9		34.1	40.3		8.0
Actuated g/C Ratio	0.09	0.46	0.35		0.38	0.45		0.09
v/c Ratio	0.46	0.35	0.33		0.87	0.65		0.51
Control Delay	36.9	22.6	22.5		42.0	21.0		62.3
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	36.9	22.6	22.5		42.0	21.0		62.3
LOS Approach Delay	D	C 24.2	C 22.5		D	C 28.5		E
Approach LOS		24.2 C	22.5 C			26.5 C		
Queue Length 50th (ft)	36	145	83		278	191		23
Queue Length 95th (ft)	m84	240	135		#474	260		#68
Internal Link Dist (ft)		80	562			90		
Turn Bay Length (ft)	200							
Base Capacity (vph)	149	1622	1180		691	1859		82
Starvation Cap Reductn	0	0	0		0	0		0
Spillback Cap Reductn Storage Cap Reductn	0	0	0		0	0		0
Reduced v/c Ratio	0.46	0.35	0.33		0.83	0.56		0.51
	0.40	0.55	0.55		0.03	0.50		0.51
Intersection Summary								
Area Type: Cycle Length: 90	Other							
Actuated Cycle Length: 90								
Offset: 81 (90%), Referenced	to phase 2·\	WBT and 6	SERT Sta	rt of Gree	n			
Natural Cycle: 80	to pridate z.i	WDT and c	J.LDT, Olu	it or orco				
Control Type: Actuated-Coord	dinated							
Maximum v/c Ratio: 0.87								
Intersection Signal Delay: 27.					tersection			
Intersection Capacity Utilization	on 61.3%			IC	CU Level of	f Service B	1	
Analysis Period (min) 15 # 95th percentile volume ex	acada canac	oitu augus	may ba la	ngor				
Queue shown is maximum			illay be io	niger.				
m Volume for 95th percentil			unstream	signal				
	, 22.51		1	J				
Splits and Phases: 5: Jeffri	es Street/Ra	mp S-T &	Transporta	ation Way				
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ø1	ø2 (R)						/ / 9	1 4

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EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
*	44						*
			86			33	39
							1900
			12			12	13
			12			12	4.0
							1.00
							1.00
							0.95
							933
							0.95
							933
			0.00			0.00	
							0.92
							42
							0
							42
			18%			1%	100%
Prot							Prot
1	6	2		3	8		4
	37.3			32.1			3.6
6.9	39.3	28.4		34.1	42.7		5.6
0.08	0.44	0.32		0.38	0.47		0.06
6.0	6.0	6.0		5.0	6.0		6.0
2.0	2.0	2.0		3.0	3.0		3.0
127	1530	1023		654	1687		58
c0.04	c0.16	0.11		c0.33	c0.29		0.05
0.54	0.37	0.36		0.88	0.61		0.72
							41.4
							1.00
							35.9
							77.3
							77.3 E
U				U			E
	C	C			C		
		05.7		21.1.0000.1			
			НС	JM 2000 L	evel of Se	rvice	
ratio							
1			ICI	U Level of	Service		
		15					
	EBL 190 63 1990 111 4.0 1.00 0.95 1662 0.95 1662 0.95 68 0 68 5% Prot 1 1 4.9 6.9 0.08 6.0 2.0 127	EBL EBT	EBL EBT WBT 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EBL EBT WBT WBR 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EBL EBT WBT WBR NBL 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	EBL EBT WBT WBR NBL NBT **	BBL BBT WBR WBR NBL NBT NBR

	•	-	•	•	—	•	4	†	1	-	Ţ	4		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9	
Lane Configurations		4			4		ሻ	1>			4			
Volume (vph)	0	0	61	93	0	78	128	269	20	30	101	46		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		0	0		0	1		0	0		0		
Taper Length (ft)	25			25			25			25				
Satd. Flow (prot)	0	822	0	0	1447	0	902	1826	0	0	1385	0		
Flt Permitted	0	000		0	0.795		0.672	100/	0		0.912	0		
Satd. Flow (perm)	0	822	0	0	1181	0	638	1826	0	0	1273	0		
Right Turn on Red		720	Yes		100	Yes		_	Yes		21	Yes		
Satd. Flow (RTOR)		729 30			109			5 30			21 30			
Link Speed (mph) Link Distance (ft)		70			30 643			331			442			
Travel Time (s)		1.6			14.6			7.5			10.0			
Confl. Peds. (#/hr)		1.0			14.0			1.5			10.0			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	66	0	0	186	0	139	314	0	0	193	0		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6		9	
Permitted Phases	4			8			2			6				
Detector Phase	4	4		8	8		2	2		6	6			
Switch Phase				45.0	45.0									
Minimum Initial (s)	6.0	6.0		15.0	15.0		6.0	6.0		6.0	6.0		4.0	
Minimum Split (s)	12.0	12.0		21.0	21.0		13.0	13.0		13.0	13.0		26.0	
Total Split (s)	28.0	28.0 35.0%		28.0	28.0 35.0%		26.0	26.0 32.5%		26.0 32.5%	26.0 32.5%		26.0 33%	
Total Split (%) Yellow Time (s)	35.0% 3.0	3.0%		35.0% 3.0	35.0%		32.5% 3.0	32.5%		3.0	32.5%		3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0		1.0	
Lost Time Adjust (s)	3.0	-1.0		3.0	-1.0		-1.0	-1.0		4.0	-1.0		1.0	
Total Lost Time (s)		5.0			5.0		6.0	6.0			6.0			
Lead/Lag		3.0			3.0		0.0	0.0			0.0			
Lead-Lag Optimize?														
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None	
Act Effct Green (s)		16.9			16.9		46.9	46.9			46.9			
Actuated g/C Ratio		0.21			0.21		0.59	0.59			0.59			
v/c Ratio		0.09			0.56		0.37	0.29			0.26			
Control Delay		0.2			19.1		16.2	9.0			12.0			
Queue Delay		0.0			0.0		0.0	0.4			0.0			
Total Delay		0.2			19.1		16.2	9.4			12.0			
LOS		Α			В		В	Α			В			
Approach Delay		0.2			19.1			11.5			12.0			
Approach LOS		A			В			В			В			
Queue Length 50th (ft)		0			33		36	78			29			
Queue Length 95th (ft)		0			90		#165	143			136			
Internal Link Dist (ft) Turn Bay Length (ft)		1			563			251			362			
		755			417		272	1072			755			
Base Capacity (vph) Starvation Cap Reductn		755			417 0		373 0	1072 366			755			
Spillback Cap Reductn		0			0		0	300			0			
Storage Cap Reductn		0			0		0	0			0			
Reduced v/c Ratio		0.09			0.45		0.37	0.44			0.26			
		0.07			0.70		0.01	0.77			0.20			
Intersection Summary														
Area Type:	Other													
Cycle Length: 80														
Actuated Cycle Length: 80		T1 1 1 1	CDTI C:											
Offset: 0 (0%), Referenced	to phase 2:NB	IL and 6:	SRIL, Sta	π of Gree	n, Master I	ntersectio	n							
Natural Cycle: 75														

Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 12.4
Intersection Capacity Utilization 55.9%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles. Intersection LOS: B
ICU Level of Service B



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4			4		7	f			4			
Volume (vph)	0	0	61	93	0	78	128	269	20	30	101	46		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0			
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00			
Frt		0.86			0.94		1.00	0.99			0.97			
Flt Protected		1.00			0.97		0.95	1.00			0.99			
Satd. Flow (prot)		822			1446		902	1827			1384			
Flt Permitted		1.00			0.79		0.67	1.00			0.91			
Satd. Flow (perm)		822			1181		638	1827			1273			
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	66	101	0	85	139	292	22	33	110	50		
RTOR Reduction (vph)	0	52	0	0	86	0	0	2	0	0	10	0		
Lane Group Flow (vph)	0	14	0	0	100	0	139	312	0	0	183	0		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4	•		8			2			6				
Actuated Green, G (s)		15.9			15.9		42.7	42.7			42.7			
Effective Green, g (s)		16.9			16.9		43.7	43.7			43.7			
Actuated g/C Ratio		0.21			0.21		0.55	0.55			0.55			
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0			
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0			
Lane Grp Cap (vph)		173			249		348	997			695			
v/s Ratio Prot		0.02						0.17						
v/s Ratio Perm					c0.08		c0.22	****			0.14			
v/c Ratio		0.08			0.40		0.40	0.31			0.26			
Uniform Delay, d1		25.3			27.2		10.5	9.9			9.6			
Progression Factor		1.00			1.00		0.73	0.70			1.00			
Incremental Delay, d2		0.1			1.1		3.3	0.8			0.9			
Delay (s)		25.4			28.3		11.0	7.8			10.5			
Level of Service		C			C		В	A			В			
Approach Delay (s)		25.4			28.3			8.7			10.5			
Approach LOS		C			C			A			В			
Intersection Summary														
HCM 2000 Control Delay			14.4	HO	CM 2000 L	evel of Se	ervice		В					
HCM 2000 Volume to Capacity ra	tio		0.37											
Actuated Cycle Length (s)			80.0	Su	ım of lost t	ime (s)			15.0					
Intersection Capacity Utilization			55.9%		U Level of				В					
Analysis Period (min)			15											

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Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	^	7	4	ሻሻ	Ĩ.			414	7	
Volume (vph)	395	288	8	546	26	231	12	301	293	
Ideal Flow (vphpl) Lane Width (ft)	1900 12	1900 11	1900 12	1900 11	1900 12	1900 13	1900 12	1900 12	1900 11	
Lane width (ft) Grade (%)	0%	П	0%	- 11	12	13	12	0%	H	
Storage Length (ft)	0,0	200	0,0	300	0		0	0,0	0	
Storage Lanes		1		2	1		0		1	
Taper Length (ft)	2202	1407	1774	25	1041	0	25	2042	1514	
Satd. Flow (prot) Flt Permitted	3282	1487	1776	3164 0.950	1261	0	0	3042 0.998	1516	
Satd. Flow (perm)	3282	1487	1776	3164	1261	0	0	3042	1516	
Right Turn on Red		Yes				Yes			Yes	
Satd. Flow (RTOR)		*40			*95				318	
Link Speed (mph)	30		30 190					30		
Link Distance (ft) Travel Time (s)	312 7.1		189 4.3					283 6.4		
Confl. Peds. (#/hr)	7.1		4.0					0.4		
Confl. Bikes (#/hr)										
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Bus Blockages (#/hr) Parking (#/hr)	0	0	0	0	0	0	0	0	0	
Mid-Block Traffic (%)	0%		0%					0%		
Shared Lane Traffic (%)	070		070					070		
Lane Group Flow (vph)	429	313	9	593	279	0	0	340	318	
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2		_	3		9
Permitted Phases Detector Phase	4	4	8	2	3 2		3	3	3	
Switch Phase	4	4	0	2	Z		3	3	3	
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0		6.0	6.0	6.0	1.0
Minimum Split (s)	14.0	15.0	14.0	15.0	15.0		13.0	13.0	13.0	34.0
Total Split (s)	16.0	16.0	16.0	16.0	16.0		24.0	24.0	24.0	34.0
Total Split (%)	17.8%	17.8%	17.8%	17.8%	17.8%		26.7%	26.7%	26.7%	38%
Yellow Time (s) All-Red Time (s)	3.0 5.0	3.0 4.0	3.0 5.0	3.0 4.0	3.0 4.0		3.0 4.0	3.0 4.0	3.0 4.0	2.0 1.0
Lost Time Adjust (s)	5.0 -2.0	-2.0	-2.0	-2.0	-2.0		4.0	-2.0	0.0	1.0
Total Lost Time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0	
Lead/Lag	2.3	Lead		Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?									_	
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effct Green (s) Actuated g/C Ratio	17.8 0.20	50.4 0.56	17.8 0.20	26.6 0.30	47.6 0.53			16.0 0.18	14.0 0.16	
v/c Ratio	0.20	0.56	0.20	0.30	0.53			0.18	0.16	
Control Delay	42.1	17.3	34.5	35.0	18.7			38.5	7.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	42.1	17.3	34.5	35.0	18.7			38.5	7.3	
LOS	D	В	С	D	В			D	Α	
Approach LOS	31.6		34.5					23.5		
Approach LOS Queue Length 50th (ft)	C 112	53	C 4	132	85			C 75	0	
Queue Length 95th (ft)	#254	231	19	m#327	m121			83	0	
Internal Link Dist (ft)	232	231	109	11# JZ I	111121			203	U	
Turn Bay Length (ft)		200		300						
Base Capacity (vph)	649	850	351	935	711			642	544	
Starvation Cap Reductn	0	0	0	0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	
Storage Cap Reductn Reduced v/c Ratio	0.66	0.37	0.03	0.63	0.39			0.53	0 0.58	
	0.00	0.37	0.03	0.03	0.37			0.00	0.30	
Intersection Summary	Other									
Area Type: Cycle Length: 90	Other									
Actuated Cycle Length: 90										
Offset: 12 (13%), Reference	d to phase 2:1	NBL. Start	of Green							
Natural Cycle: 90		,								
Control Type: Actuated-Coor	rdinated									
Maximum v/c Ratio: 0.66										
Intersection Signal Delay: 28 Intersection Capacity Utilizat					ntersection		١			
Analysis Period (min) 15	IUII 32.9%			10	CU Level of	Service A	1			
* User Entered Value										
# 95th percentile volume e	xceeds capac	city, queue	may be lo	onger.						
Queue shown is maximur			. ,	J						
m Volume for 95th percent			upstream	signal.						

Splits and Phases: 17: Transportation Way/SR-14 #10 & Porter St/Ramp S-A & Ramp S-D



	→	•	←	1	7	/	/		4
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	^	7	4	ሻሻ	Ž.			414	7
Volume (vph)	395	288	8	546	26	231	12	301	293
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	13	12	12	11
Total Lost time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.95	1.00
Frt	1.00	0.85	1.00	1.00	0.85			1.00	0.85
Flt Protected	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	3282	1487	1776	3164	1261			3042	1516
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	3282	1487	1776	3164	1261			3042	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	429	313	9	593	28	251	13	327	318
RTOR Reduction (vph)	0	21	0	0	52	0	0	0	269
Lane Group Flow (vph)	429	292	9	593	227	0	0	340	49
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%
						20%			
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm
Protected Phases	4	2	8	2	2			3	_
Permitted Phases	45.5	4	45.5	20.5	3		3	41.5	3
Actuated Green, G (s)	15.8	38.6	15.8	22.8	36.8			14.0	14.0
Effective Green, g (s)	17.8	42.6	17.8	24.8	40.8			16.0	14.0
Actuated g/C Ratio	0.20	0.47	0.20	0.28	0.45			0.18	0.16
Clearance Time (s)	8.0	7.0	8.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	649	703	351	871	641			540	235
v/s Ratio Prot	c0.13	0.11	0.01	c0.19	0.10				
v/s Ratio Perm		0.08			0.08			0.11	0.03
v/c Ratio	0.66	0.42	0.03	0.68	0.35			0.63	0.21
Uniform Delay, d1	33.3	15.5	29.1	29.1	16.0			34.3	33.2
Progression Factor	0.98	1.02	1.00	0.94	1.61			0.97	0.33
Incremental Delay, d2	2.0	0.1	0.0	3.2	0.1			1.7	0.33
Delay (s)	34.5	16.0	29.1	30.6	25.9			35.0	11.2
Level of Service	34.3 C	10.0 B	29.1 C	30.0 C	25.9 C			33.0 D	11.2 B
Approach Delay (s)	26.7	Ь	29.1	C	C			23.5	В
Approach LOS	С		С					С	
Intersection Summary									
HCM 2000 Control Delay			26.7	Н	CM 2000 I	_evel of Se	ervice		С
HCM 2000 Volume to Capacit	y ratio		0.54						
Actuated Cycle Length (s)			90.0	S	um of lost	time (s)			19.0
Intersection Capacity Utilization	n		52.9%		CU Level o	. ,			Α
Analysis Period (min)			15						
c Critical Lane Group									
5 Silliour Euric Group									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3	
Lane Configurations	, j	↑ 1>			4Th						44	7		
Volume (vph)	226	69	263	1	54	72	0	0	0	78	294	310		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%	_	_	0%	_	_	0%	_	_	0%			
Storage Length (ft)	250		0	0		0	0		0	0		150		
Storage Lanes	1		0	0		0	0		0	0		1		
Taper Length (ft)	25	0000		25	0775		25	_		25	0050	4500		
Satd. Flow (prot)	1770	3002	0	0	2775	0	0	0	0	0	3352	1583		
Flt Permitted	0.950	2002	0	0	0.953	0	0	0	0	0	0.990	1502		
Satd. Flow (perm)	1770	3002	0 Yes	0	2645	Yes	0	0	0 Yes	0	3352	1583 Yes		
Right Turn on Red Satd. Flow (RTOR)		*60	162		78	162			162			337		
Link Speed (mph)		30			30			30			30	337		
Link Distance (ft)		430			1019			522			475			
Travel Time (s)		9.8			23.2			11.9			10.8			
Confl. Peds. (#/hr)		7.0			25.2			11.7			10.0			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)	_	-	-	-	-	-	-	-	-					
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	246	361	0	0	138	0	0	0	0	0	405	337		
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov		
Protected Phases	1	6			2					4	4	1	3	
Permitted Phases				2								4		
Detector Phase	1	6		2	2					4	4	1		
Switch Phase														
Minimum Initial (s)	6.0	10.0		10.0	10.0					6.0	6.0	6.0	1.0	
Minimum Split (s)	13.0	17.0		17.0	17.0					13.0	13.0	13.0	27.0	
Total Split (s)	28.0	45.0		17.0	17.0					18.0	18.0	28.0	27.0	
Total Split (%)	31.1%	50.0%		18.9%	18.9%					20.0%	20.0%	31.1%	30%	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0		4.0	4.0					3.0	3.0	4.0	0.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0						-2.0	-2.0		
Total Lost Time (s) Lead/Lag	5.0 Lead	5.0		Lag	5.0 Lag					Lag	4.0 Lag	5.0 Lead	Lead	
Lead-Lag Optimize?	Leau			Lay	Lay					Yes	Yes	Leau	Yes	
Recall Mode	None	C-Max		C-Max	C-Max					None	None	None	None	
Act Effct Green (s)	18.4	55.4		o max	32.0					140110	14.8	37.2	140110	
Actuated g/C Ratio	0.20	0.62			0.36						0.16	0.41		
v/c Ratio	0.68	0.19			0.14						0.74	0.40		
Control Delay	51.4	11.8			14.8						44.9	3.3		
Queue Delay	0.0	0.0			0.0						0.0	0.0		
Total Delay	51.4	11.8			14.8						44.9	3.3		
LOS	D	В			В						D	Α		
Approach Delay		27.9			14.8						26.0			
Approach LOS		С			В						С			
Queue Length 50th (ft)	142	33			10						112	0		
Queue Length 95th (ft)	217	83			43						#183	45		
Internal Link Dist (ft)	050	350			939			442			395	450		
Turn Bay Length (ft)	250	1070			001						FFO	150		
Base Capacity (vph)	452	1870			991						558	915		
Starvation Cap Reductn	0	0			0						0	0		
Spillback Cap Reductn Storage Cap Reductn	0	0			0						0	0		
Reduced v/c Ratio	0 0.54	0 0.19			0.14						0.73	0.37		
	0.54	0.19			0.14						0.73	0.57		
Intersection Summary														
	Other													
Cycle Length: 90														
Actuated Cycle Length: 90														
Offset: 0 (0%), Referenced to p	hase 2:WB	3 FL and 6:	EBT, Start	of Green	, Master In	tersection								
Natural Cycle: 75														
Control Type: Actuated-Coordin	nated													
Maximum v/c Ratio: 0.74					Anna a - H -	1.00.0								
Intersection Signal Delay: 25.7					itersection									
Intersection Capacity Utilization	1 42.9%			IC	CU Level of	Service A	1							
Analysis Period (min) 15 * User Entered Value														
# 95th percentile volume exc	oods canaa	city augus	may bo lo	nger										
Queue shown is maximum a			may be 10	niget.										
Queue showir is maximum e	unce avolcy	, olo3,												
Splits and Phases: 22: Toma	ahawk Drive	e/Hotel Dri	ve & Trans	sportation	Way/Harh	orside Dri	ve #10							
		o.c. DII	. J G Hull		—	5.GC DII			1.1					W .
≤ _{ø1}				• 2	ø2 (R)				∳Å ø3					¼ _{ø4}

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	*	↑ ↑			4T>						414	7
Volume (vph)	226	69	263	1	54	72	0	0	0	78	294	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00
Frt	1.00	0.88			0.92						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.99	1.00
Satd. Flow (prot)	1770	3002			2775						3351	1583
Flt Permitted	0.95	1.00			0.95						0.99	1.00
Satd. Flow (perm)	1770	3002			2645						3351	1583
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)	246	75	286	1	59	78	0	0	0	85	320	337
RTOR Reduction (vph)	0	24	0	0	52	0	0	0	0	0	0	213
Lane Group Flow (vph)	246	337	0	0	86	0	0	0	0	0	405	124
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov
Protected Phases	1	6			2					4	4	1
Permitted Phases				2								4
Actuated Green, G (s)	16.4	51.6			28.2						12.8	29.2
Effective Green, q (s)	18.4	53.6			30.2						14.8	33.2
Actuated g/C Ratio	0.20	0.60			0.34						0.16	0.37
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0
Lane Grp Cap (vph)	361	1787			887						551	583
v/s Ratio Prot	c0.14	c0.11									c0.12	0.04
v/s Ratio Perm					0.03							0.04
v/c Ratio	0.68	0.19			0.10						0.74	0.21
Uniform Delay, d1	33.1	8.3			20.5						35.7	19.5
Progression Factor	1.28	1.33			1.00						1.00	1.00
Incremental Delay, d2	4.1	0.2			0.2						4.4	0.1
Delay (s)	46.3	11.2			20.8						40.1	19.5
Level of Service	D	В			С						D	В
Approach Delay (s)		25.5			20.8			0.0			30.8	
Approach LOS		С			С			Α			С	
Intersection Summary												
HCM 2000 Control Delay			27.7	НС	M 2000 I	evel of Se	rvice		С			
HCM 2000 Volume to Capacity	v ratio		0.40	- 110	2000 L	ever or Se	I VICC		U			
Actuated Cycle Length (s)	, 14110		90.0	Su	m of lost t	ime (s)			17.0			
Intersection Capacity Utilization	n		42.9%		U Level of	. ,			Α			
Analysis Period (min)			15	10	0.0.01	_ 3						

	•	-	•	•	←	•	4	†	~	-	↓	4			
_ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø3	ø9	
ane Configurations	*		7	ሻ	4î		*	↑			1>				
/olume (vph)	81	0	170	39	68	27	180	119	0	0	200	4			
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
ane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12			
Grade (%)		0%			0%			0%			0%				
torage Length (ft)	0		0	100		0	0		0	0		0			
torage Lanes	1		1	1		0	1		0	0		0			
aper Length (ft)	25			25			25			25					
Satd. Flow (prot)	1583	0	1417	1752	1405	0	1583	1667	0	0	1470	0			
It Permitted	0.690			0.950			0.435								
atd. Flow (perm)	1150	0	1417	1752	1405	0	725	1667	0	0	1470	0			
ight Turn on Red			Yes			Yes			Yes			Yes			
atd. Flow (RTOR)			185		17	.00			100		1	100			
nk Speed (mph)		30	100		30			30			30				
ink Distance (ft)		344			1001			716			257				
ravel Time (s)		7.8			22.8			16.3			5.8				
onfl. Peds. (#/hr)		7.0			22.0			10.3			3.0				
onfl. Bikes (#/hr)															
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
eak Hour Factor rowth Factor	100%	100%			100%			100%				100%			
			100%	100%		100%	100%		100%	100%	100%	29%			
eavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%				
us Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0			
arking (#/hr)															
lid-Block Traffic (%)		0%			0%			0%			0%				
hared Lane Traffic (%)															
ane Group Flow (vph)	88	0	185	42	103	0	196	129	0	0	221	0			
urn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA				
rotected Phases			3 9	1	6		3 9	8			4		3	9	
ermitted Phases	2		2	6			8								
etector Phase	2		2	1	6		3	8			4				
witch Phase															
inimum Initial (s)	6.0			6.0	6.0			10.0			10.0		6.0	4.0	
inimum Split (s)	12.0			12.0	12.0			15.5			15.5		11.5	20.0	
otal Split (s)	21.0			12.0	33.0			57.0			21.0		36.0	20.0	
otal Split (%)	19.1%			10.9%	30.0%			51.8%			19.1%		33%	18%	
ellow Time (s)	3.0			3.0	3.0			4.0			4.0		3.0	2.0	
II-Red Time (s)	3.0			3.0	3.0			1.5			1.5		2.5	1.0	
ost Time Adjust (s)	-1.0			-1.0	-1.0			-1.0			-1.0				
otal Lost Time (s)	5.0			5.0	5.0			4.5			4.5				
ead/Lag	Lag			Lead							Lag		Lead		
ead-Lag Optimize?	9										9				
ecall Mode	None			None	None			None			None		None	None	
ct Effct Green (s)	10.4		27.5	16.7	16.7		34.0	31.2			17.5		140110	740110	
ctuated g/C Ratio	0.17		0.45	0.27	0.27		0.56	0.51			0.29				
ctualed gro Ratio	0.17		0.45	0.27	0.27		0.34	0.31			0.29				
ontrol Delay	34.1		2.7	17.1	16.7		10.4	13.7			29.5				
	0.0		0.0	0.0	0.0		0.0	0.0			0.0				
ueue Delay	34.1		2.7		16.7		10.4	13.7			29.5				
otal Delay				17.1											
OS pproach Dolay	С		Α	В	16 O		В	11.7			C 29.5				
pproach Delay					16.9			11.7							
pproach LOS	0.4			10	В		40	В			C				
ueue Length 50th (ft)	31		0	10	22		40	25			72				
ueue Length 95th (ft)	87	011	27	38	71		85	93			#227				
ternal Link Dist (ft)		264		400	921			636			177				
urn Bay Length (ft)				100											
ase Capacity (vph)	321		739	480	695		946	1417			424				
tarvation Cap Reductn	0		0	0	0		0	0			0				
pillback Cap Reductn	0		0	0	0		0	0			0				
Storage Cap Reductn	0		0	0	0		0	0			0				
Reduced v/c Ratio	0.27		0.25	0.09	0.15		0.21	0.09			0.52				
ntersection Summary															
rea Type:	Other														
ycle Length: 110	Julei														
ctuated Cycle Length: 60.8															
ciualeu Cycle Leffgiff: 60.8															

Cycle Length: 110
Actuated Cycle Length: 60.8
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 16.9
Intersection Capacity Utilization 42.7%
Analysis Period (min) 15

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



Intersection LOS: B
ICU Level of Service A

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	*		1	*	î,		*	†			î,		
Volume (vph)	81	0	170	39	68	27	180	119	0	0	200	4	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0		4.5	5.0	5.0		4.5	4.5			4.5		
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00		
Frt	1.00		0.85	1.00	0.96		1.00	1.00			1.00		
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00			1.00		
Satd. Flow (prot)	1583		1417	1752	1404		1583	1667			1469		
Flt Permitted	0.69		1.00	0.95	1.00		0.43	1.00			1.00		
Satd. Flow (perm)	1151		1417	1752	1404		724	1667			1469		
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)	88	0	185	42	74	29	196	129	0	0	217	4	
RTOR Reduction (vph)	0	0	121	0	12	0	0	0	0	0	1	0	
Lane Group Flow (vph)	88	0	64	42	91	0	196	129	0	0	220	0	
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%	
Turn Type	Perm		pt+ov	pm+pt	NA		pm+pt	NA			NA		
Protected Phases			3 9	1	6		39	8			4		
Permitted Phases	2		2	6			8						
Actuated Green, G (s)	9.4		22.6	18.5	18.5		35.5	30.1			16.8		
Effective Green, g (s)	10.4		22.6	19.5	19.5		34.5	31.1			17.8		
Actuated g/C Ratio	0.16		0.35	0.30	0.30		0.53	0.47			0.27		
Clearance Time (s)	6.0			6.0	6.0			5.5			5.5		
Vehicle Extension (s)	2.0			2.0	2.0			2.0			2.0		
Lane Grp Cap (vph)	182		488	521	417		541	791			399		
v/s Ratio Prot			0.02	0.01	c0.06		c0.07	0.08			c0.15		
v/s Ratio Perm	c0.08		0.02	0.02			0.12						
v/c Ratio	0.48		0.13	0.08	0.22		0.36	0.16			0.55		
Uniform Delay, d1	25.1		14.7	16.5	17.3		8.8	9.8			20.4		
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00			1.00		
Incremental Delay, d2	0.7		0.0	0.0	0.1		0.2	0.0			0.9		
Delay (s)	25.8		14.8	16.6	17.4		8.9	9.8			21.4		
Level of Service	С		В	В	В		Α	Α			С		
Approach Delay (s)		18.3			17.1			9.3			21.4		
Approach LOS		В			В			Α			С		
Intersection Summary													
HCM 2000 Control Delay			15.8	H	CM 2000 L	evel of S	ervice		В				
HCM 2000 Volume to Capacity	y ratio		0.48										
Actuated Cycle Length (s)			65.5		ım of lost t				22.0				
Intersection Capacity Utilizatio	on		42.7%	IC	U Level of	Service			Α				
Analysis Period (min)			15										

	٠	→	•	1	←	•	1	<u>†</u>	<i>></i>	/	 	4		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	
Lane Configurations		4	7	ሻ		7		↑ ↑			414			
Volume (vph)	103	22	506	80	0	58	0	139	166	73	336	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		1	1		1	0		0	0		0		
Taper Length (ft)	25			25			25			25				
Satd. Flow (prot)	0	1555	1468	1480	0	1369	0	2760	0	0	3064	0		
Flt Permitted		0.960		0.950							0.830			
Satd. Flow (perm)	0	1555	1468	1480	0	1369	0	2760	0	0	2566	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			550			121		180						
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		662			390			344			716			
Travel Time (s)		15.0			8.9			7.8			16.3			
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		
Peak Hour Factor Growth Factor	0.92 100%	0.92 100%	0.92	0.92 100%	0.92 100%	0.92 100%	0.92 100%	0.92 100%	0.92	0.92 100%	0.92 100%	0.92 100%		
Heavy Vehicles (%)	21%	0%	100%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Bus Blockages (#/hr)	0	0/8	0	0	0 / 0	0	0/8	0	0	0	0	0 %		
Parking (#/hr)	U	U	U	U	U	U	U	U	U	U	U	U		
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)		070			070			070			070			
Lane Group Flow (vph)	0	136	550	87	0	63	0	331	0	0	444	0		
Turn Type	Split	NA	Prot	Prot	· ·	Prot	U	NA	0	Perm	NA	0		
Protected Phases	4	4	4	3		3		1			1		2	
Permitted Phases	•	•	-	-				•		1	•		=	
Detector Phase	4	4	4	3		3		1		1	1			
Switch Phase														
Minimum Initial (s)	7.0	7.0	7.0	5.0		5.0		7.0		7.0	7.0		1.0	
Minimum Split (s)	12.0	12.0	12.0	10.0		10.0		13.0		13.0	13.0		22.0	
Total Split (s)	17.0	17.0	17.0	17.0		17.0		33.0		33.0	33.0		23.0	
Total Split (%)	18.9%	18.9%	18.9%	18.9%		18.9%		36.7%		36.7%	36.7%		26%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0		2.0	
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0		2.0		2.0	2.0		0.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0		-1.0		-2.0			-2.0			
Total Lost Time (s)		4.0	4.0	4.0		4.0		4.0			4.0			
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	Lead		Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes		Yes	
Recall Mode	None	None	None	None		None		Min		Min	Min		None	
Act Effct Green (s)		11.5	11.5	9.5		9.5		18.5			18.5			
Actuated g/C Ratio		0.22	0.22	0.18		0.18		0.36			0.36			
v/c Ratio		0.40	0.73	0.32 28.5		0.18 1.9		0.30			0.49 17.8			
Control Delay		28.1 0.0	10.1	0.0		0.0		8.2 0.0			0.0			
Queue Delay Total Delay		28.1	10.1	28.5		1.9		8.2			17.8			
LOS		20.1 C	10.1 B	26.5 C		1.9 A		0.2 A			17.6 B			
Approach Delay		13.7	D	C		A		8.2			17.8			
Approach LOS		13.7 B						0.2 A			17.0 B			
Queue Length 50th (ft)		33	0	21		0		14			48			
Queue Length 95th (ft)		#136	#152	91		5		64			154			
Internal Link Dist (ft)		582	102	71	310	3		264			636			
Turn Bay Length (ft)		302			3.0						500			
Base Capacity (vph)		454	818	432		485		1799			1610			
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		0.30	0.67	0.20		0.13		0.18			0.28			
Intersection Summary														
Area Type:	Other													
Cycle Length: 90	Other													
Actuated Cycle Length: 52.1														
notation Gyole Length, 32.1														

Intersection LOS: B
ICU Level of Service B

Actuated Cycle Length: 52.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 14.0
Intersection Capacity Utilization 57.2%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 27: Hotel Drive & TWT Off-Ramp/Airport Way ÅÅø2

	•	\rightarrow	•	•	—	•	4	†	/	-	↓	4		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4	7	**		7		† }			414			
Volume (vph)	103	22	506	80	0	58	0	139	166	73	336	0		
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		4.0			4.0			
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95			
Frt		1.00	0.85	1.00		0.85		0.92			1.00			
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99			
Satd. Flow (prot)		1556	1468	1480		1369		2761			3065			
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.83			
Satd. Flow (perm)		1556	1468	1480		1369		2761			2566			
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)	112	24	550	87	0	63	0	151	180	79	365	0		
RTOR Reduction (vph)	0	0	433	0	0	54	0	118	0	0	0	0		
Lane Group Flow (vph)	0	136	117	87	0	9	0	213	0	0	444	0		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA			
Protected Phases	4	4	4	3		3		1			1			
Permitted Phases										1				
Actuated Green, G (s)		10.3	10.3	6.3		6.3		16.2			16.2			
Effective Green, q (s)		11.3	11.3	7.3		7.3		18.2			18.2			
Actuated g/C Ratio		0.21	0.21	0.14		0.14		0.34			0.34			
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0			
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0			
Lane Grp Cap (vph)		331	312	203		188		946			879			
v/s Ratio Prot		c0.09	0.08	c0.06		0.01		0.08						
v/s Ratio Perm											c0.17			
v/c Ratio		0.41	0.38	0.43		0.05		0.22			0.51			
Uniform Delay, d1		18.0	17.9	21.0		19.9		12.4			13.9			
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00			
Incremental Delay, d2		0.3	0.3	0.5		0.0		0.1			0.5			
Delay (s)		18.3	18.2	21.5		19.9		12.5			14.3			
Level of Service		В	В	С		В		В			В			
Approach Delay (s)		18.2			20.8			12.5			14.3			
Approach LOS		В			С			В			В			
Intersection Summary														
HCM 2000 Control Delay			16.2	H	CM 2000 L	evel of Se	ervice		В					
HCM 2000 Volume to Capacity rati	io		0.43											
Actuated Cycle Length (s)			53.1		um of lost				14.0					
Intersection Capacity Utilization			57.2%	IC	U Level of	Service			В					
Analysis Period (min)			15											

	٠	•	, 1	†	ļ	4	
Lane Group	EBL	EBR	BR NB	L NBT	SBT	SBR	ø2
Lane Configurations	¥			†	†		
Volume (vph)	162	29		0 255	255	0	
Ideal Flow (vphpl)	1900	1900			1900	1900	
Lane Width (ft)	12	12	12 1:		12	12	
Grade (%)	0%	0	0	0%	0%	0	
Storage Length (ft)	0	0		0 0		0	
Storage Lanes	25	U	2			U	
Taper Length (ft) Satd. Flow (prot)	1723	0		0 1652	1610	0	
Flt Permitted	0.959	U	J	0 1002	1010	U	
Satd. Flow (perm)	1723	0	0	0 1652	1610	0	
Right Turn on Red	.,20	Yes				Yes	
Satd. Flow (RTOR)	12						
Link Speed (mph)	30			30	30		
Link Distance (ft)	499			447	331		
Travel Time (s)	11.3			10.2	7.5		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92			0.92	0.92	
Growth Factor	100%	100%			100%	100%	
Heavy Vehicles (%)	4%	1%			18%	0%	
Bus Blockages (#/hr)	0	0	0	0 0	0	0	
Parking (#/hr)	00/			201	201		
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)	200	0	0	0 077	277	0	
Lane Group Flow (vph)	208 Perm	0	U	0 277	277	0	
Turn Type	Perm			NA 1	NA 1		2
Protected Phases Permitted Phases	3				1		2
Detector Phase	3			1	1		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		4.0
Minimum Split (s)	13.0			13.0	13.0		19.0
Total Split (s)	30.0			30.0	30.0		20.0
Total Split (%)	37.5%			37.5%	37.5%		25%
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		1.0
Lost Time Adjust (s)	-1.0			-1.0	-1.0		
Total Lost Time (s)	4.0			4.0	4.0		
Lead/Lag				Lead	Lead		Lag
Lead-Lag Optimize?				Yes	Yes		Yes
Recall Mode	None			C-Max	C-Max		None
Act Effct Green (s)	14.6			53.6	53.6		
Actuated g/C Ratio	0.18			0.67	0.67		
v/c Ratio	0.64			0.25	0.26		
Control Delay	37.0			8.9	6.3		
Queue Delay	0.0			0.0	0.3		
Total Delay	37.0			8.9	6.6		
LOS	D			A 8.9	A		
Approach Delay Approach LOS	37.0 D			8.9 A	6.6 A		
Queue Length 50th (ft)	91			38	43		
Queue Length 95th (ft)	146			160	113		
Internal Link Dist (ft)	419			367	251		
Turn Bay Length (ft)	417			307	231		
Base Capacity (vph)	568			1105	1077		
Starvation Cap Reductn	0			0	352		
Spillback Cap Reductn	0			2	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.37			0.25	0.38		
Intersection Summary							
Area Type:	Other						
Cycle Length: 80							
Actuated Cycle Length: 80		NDCD Ct-	Clast of Ca				
Offset: 79 (99%), Reference	ed to phase 1:	NBSB, Sta	Start of Gr	een			
Natural Cycle: 55 Control Type: Actuated-Coo	ordinated						
Maximum v/c Ratio: 0.64	urumated						
	15.7			l.	torcoction	I OS: P	
Intersection Signal Delay: 1 Intersection Capacity Utiliza					ntersection CU Level o		
intersection Capacity Utiliza Analysis Period (min) 15	2UUII 3U.8%			10	o revei 0	Service A	
miaiysis Feliuu (IIIII) 15							
Splits and Phases: 33: SI	R-2/Frankfort	Street & P	& Route 14	NB Off-Ran	מר		
				on ran	т	2 4	
, ↓↑ ø1 (R)						₹kø2	
0 s						20 s	

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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	¥				↑			
Volume (vph)	162	29	0	255	255	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)	4.0			4.0	4.0			
Lane Util. Factor	1.00			1.00	1.00			
Frt	0.98			1.00	1.00			
Flt Protected	0.96			1.00	1.00			
Satd. Flow (prot)	1724			1652	1610			
Flt Permitted	0.96			1.00	1.00			
Satd. Flow (perm)	1724			1652	1610			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		_
Adj. Flow (vph)	176	32	0	277	277	0		
RTOR Reduction (vph)	10	0	0	0	0	0		
Lane Group Flow (vph)	198	0	0	277	277	0		
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%		
Turn Type	Perm			NA	NA			
Protected Phases				1	1			
Permitted Phases	3							
Actuated Green, G (s)	13.6			50.2	50.2			
Effective Green, g (s)	14.6			51.2	51.2			
Actuated g/C Ratio	0.18			0.64	0.64			
Clearance Time (s)	5.0			5.0	5.0			
Vehicle Extension (s)	2.0			2.0	2.0			
Lane Grp Cap (vph)	314			1057	1030			
v/s Ratio Prot	017			0.17	c0.17			
v/s Ratio Perm	c0.11			0.17	50.17			
v/c Ratio	0.63			0.26	0.27			
Uniform Delay, d1	30.2			6.2	6.3			
Progression Factor	1.00			1.00	0.69			
Incremental Delay, d2	3.0			0.6	0.6			
Delay (s)	33.2			6.8	4.9			
Level of Service	C			Α.	A			
Approach Delay (s)	33.2			6.8	4.9			
Approach LOS	C			Α	A			
				- '	- '			
Intersection Summary								
HCM 2000 Control Delay			13.3	H	CM 2000 L	evel of Service	В	
HCM 2000 Volume to Capac	city ratio		0.34					
Actuated Cycle Length (s)			80.0		ım of lost t		12.0	
Intersection Capacity Utiliza	tion		30.8%	IC	U Level of	Service	A	
Analysis Period (min)			15					

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Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	*	7	1>			ની
Volume (vph)	116	31	223	55	20	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	200		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1367	1188	1602	0	0	1662
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1367	1188	1602	0	0	1662
Link Speed (mph)	30		30			30
Link Distance (ft)	325		926			447
Travel Time (s)	7.4		21.0			10.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	32%	36%	18%	5%	38%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	34	302	0	0	309
Sign Control	Stop		Free			Free
Intersection Summary						
	Other					
Area Type:	Other					
Control Type: Unsignalized	42 F0/			10	المستمالا	Candac A
Intersection Capacity Utilizati	on 43.5%			IC	U Level of	Service A
Analysis Period (min) 15						

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Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	**	7	4		0	4
Volume (veh/h)	116	31	223	55	20	264
Sign Control	Stop	- 51	Free	- 55	20	Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	126	34	242	60	22	287
Pedestrians	120	J-1	272	00		201
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type		0	None			None
Median storage veh)			None			None
Upstream signal (ft)						447
pX, platoon unblocked	0.95					447
vC, conflicting volume	603	272			302	
	003	212			302	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol	FF./	070			202	
vCu, unblocked vol	556	272			302	
tC, single (s)	6.7	6.6			4.5	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	70	95			98	
cM capacity (veh/h)	414	692			1080	
Direction, Lane #	WB 1	NE 1	SW 1			
Volume Total	160	302	309			
Volume Left	126	0	22			
Volume Right	34	60	0			
cSH	525	1700	1080			
Volume to Capacity	0.30	0.18	0.02			
Queue Length 95th (ft)	32	0	2			
Control Delay (s)	16.0	0.0	0.8			
Lane LOS	С		Α			
Approach Delay (s)	16.0	0.0	0.8			
Approach LOS	С					
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			43.5%	10	U Level of S	ondoc
				IC	o revei of 2	ervice
Analysis Period (min)			15			

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Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	*	^	↑ ↑		ሻ	†		*
Volume (vph)	102	759	295	142	830	1022	37	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)	000	0%	0%		^	0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1 25			0	1 25		0	
Taper Length (ft) Satd. Flow (prot)	1662	3505	3163	0	25 1728	3556	0	933
Flt Permitted	0.950	3000	3103	U	0.950	2000	U	0.950
Satd. Flow (perm)	1662	3505	3163	0	1728	3556	0	933
Right Turn on Red	1002	5505	5100	Yes	.,20	5550	Yes	,55
Satd. Flow (RTOR)			66	. 50		6	. 50	
Link Speed (mph)		30	30			30		
Link Distance (ft)		160	642			170		
Travel Time (s)		3.6	14.6			3.9		
Confl. Peds. (#/hr)								
Confl. Bikes (#/hr)								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0
Parking (#/hr)		00/	007			00/		
Mid-Block Traffic (%)		0%	0%			0%		
Shared Lane Traffic (%)	111	025	475	0	002	1151	0	40
Lane Group Flow (vph)	111 Prot	825 NA	475 NA	0	902 Prot	1151 NA	U	42 Prot
Turn Type Protected Phases	Prot 1	NA 6	NA 2		Prot 3	NA 8		Prot 4
Permitted Phases		0	2		3	0		4
Detector Phase	1	6	2		3	8		4
Switch Phase		0			3	- 0		7
Minimum Initial (s)	6.0	10.0	10.0		10.0	6.0		6.0
Minimum Split (s)	12.0	16.0	27.0		15.0	24.0		12.0
Total Split (s)	12.0	39.0	27.0		59.0	71.0		12.0
Total Split (%)	10.9%	35.5%	24.5%		53.6%	64.5%		10.9%
Yellow Time (s)	3.0	3.0	3.0		3.0	3.0		3.0
All-Red Time (s)	3.0	3.0	3.0		2.0	3.0		3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0		4.0
Lead/Lag	Lead		Lag		Lag			Lead
Lead-Lag Optimize? Recall Mode	None	C-Max	C-Max		None	None		None
Act Effct Green (s)	None 8.0	35.0	C-IVIAX 23.0		58.4	67.0		None 8.0
Actuated g/C Ratio	0.07	0.32	0.21		0.53	0.61		0.07
v/c Ratio	0.07	0.32	0.21		0.98	0.53		0.63
Control Delay	96.0	44.1	41.5		53.5	13.6		88.2
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	96.0	44.1	41.5		53.5	13.6		88.2
LOS	F	D	D		D	В		F
Approach Delay		50.3	41.5			31.1		
Approach LOS		D	D			С		
Queue Length 50th (ft)	83	316	141		~681	224		29
Queue Length 95th (ft)	m#121	m298	206		#929	292		#87
Internal Link Dist (ft)		80	562			90		
Turn Bay Length (ft)	200							
Base Capacity (vph)	120	1115	713		917	2168		67
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	0.93	0.74	0.67		0.98	0.53		0.63
Intersection Summary								
Area Type:	Other							
Cycle Length: 110								
Actuated Cycle Length: 110								
Offset: 0 (0%), Referenced	to phase 2:WE	3T and 6:E	EBT, Start	of Green				
Natural Cycle: 110								
Control Type: Actuated-Coo	ordinated							
Maximum v/c Ratio: 0.98						100 -		
Intersection Signal Delay: 3					tersection		,	
Intersection Capacity Utiliza	ation 81.0%			IC	CU Level of	service [)	
Analysis Period (min) 15	ity augus is th	ooroticall.	, infinito					
 Volume exceeds capac Queue shown is maximu 			y iriiinite.					
# 95th percentile volume			may ho le	nger				
Queue shown is maximu			anay be it	ліуеі.				
Queue SHOWH IS MAXIMU	um aner iwo cy	rues.						

Queue shown is maximum after two cycles.

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



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Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	*	^	† 1>		ሻ	† 1>		*
Volume (vph)	102	759	295	142	830	1022	37	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	12	12	11	12	12	13
Total Lost time (s)	4.0	4.0	4.0	12	3.0	4.0	12	4.0
	1.00	0.95	0.95		1.00	0.95		1.00
Lane Util. Factor								
Frt	1.00	1.00	0.95		1.00	0.99		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1662	3505	3164		1728	3556		933
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1662	3505	3164		1728	3556		933
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	825	321	154	902	1111	40	42
RTOR Reduction (vph)	0	0	53	0	0	2	0	0
Lane Group Flow (vph)	111	825	422	0	902	1149	0	42
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
Turn Type	Prot	NA	NA	1070	Prot	NA	170	Prot
						NA 8		
Protected Phases	1	6	2		3	8		4
Permitted Phases								
Actuated Green, G (s)	6.0	31.8	19.8		56.4	66.2		4.8
Effective Green, g (s)	8.0	33.8	21.8		58.4	68.2		6.8
Actuated g/C Ratio	0.07	0.31	0.20		0.53	0.62		0.06
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0
Lane Grp Cap (vph)	120	1076	627		917	2204		57
v/s Ratio Prot	c0.07	c0.24	0.13		c0.52	0.32		c0.05
v/s Ratio Perm								
v/c Ratio	0.93	0.77	0.67		0.98	0.52		0.74
Uniform Delay, d1	50.7	34.5	40.8		25.3	11.7		50.7
Progression Factor	0.92	1.22	1.07		1.00	1.01		1.00
Incremental Delay, d2	43.0	3.3	5.4		25.6	0.2		38.8
		3.3 45.5	5.4 49.0					
Delay (s)	89.5				51.0	12.1		89.5
Level of Service	F	D	D		D	В		F
Approach Delay (s)		50.7	49.0			29.2		
Approach LOS		D	D			С		
Intersection Summary								
HCM 2000 Control Delay			38.3	H	CM 2000 L	evel of Se	rvice	
HCM 2000 Volume to Capacit	v ratio		0.93					
Actuated Cycle Length (s)	,		110.0	Sı	ım of lost t	ime (s)		
Intersection Capacity Utilization	nn		81.0%		U Level of			
Analysis Period (min)			15	10	C 20001 01	0014100		
c Critical Lane Group			10					
c Gillical Latte Group								

	•	→	*	•	←	•	1	†	~	\	Ţ	4		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9	
Lane Configurations		4			4		ሻ	1>			4	-		
Volume (vph)	0	0	129	59	0	51	252	450	34	20	64	29		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		0	0		0	1		0	0		0		
Taper Length (ft)	25		_	25		_	25		_	25		_		
Satd. Flow (prot)	0	822	0	0	1447	0	902	1826	0	0	1383	0		
Flt Permitted	0	000	0	0	0.747	0	0.677	100/	0	0	0.889	0		
Satd. Flow (perm) Right Turn on Red	0	822	0 Yes	U	1109	0 Yes	643	1826	Yes	U	1241	Yes		
Satd. Flow (RTOR)		795	162		109	162		5	162		21	162		
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		70			643			331			442			
Travel Time (s)		1.6			14.6			7.5			10.0			
Confl. Peds. (#/hr)		110			1110			7.0			10.0			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	140	0	0	119	0	274	526	0	0	124	0		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA		_	
Protected Phases		4		0	8		0	2		,	6		9	
Permitted Phases Detector Phase	4	4		8	8		2	2		6	6			
Switch Phase	4	4		ð	ð		2	2		6	0			
Minimum Initial (s)	6.0	6.0		15.0	15.0		6.0	6.0		6.0	6.0		4.0	
Minimum Split (s)	12.0	12.0		21.0	21.0		13.0	13.0		13.0	13.0		26.0	
Total Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0		26.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		32.5%	32.5%		32.5%	32.5%		33%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0		1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0			
Total Lost Time (s)		5.0			5.0		6.0	6.0			6.0			
Lead/Lag														
Lead-Lag Optimize?														
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None	
Act Effct Green (s)		16.0			16.0		47.8	47.8			47.8			
Actuated g/C Ratio		0.20			0.20		0.60	0.60			0.60			
v/c Ratio		0.17			0.39		0.72	0.48			0.17			
Control Delay		0.5			11.2		26.1	12.8			9.8			
Queue Delay		0.0			0.0		0.0	0.6			0.0			
Total Delay LOS		0.5 A			11.2 B		26.1	13.4 B			9.8 A			
Approach Delay		0.5			11.2		С	17.7			9.8			
Approach LOS		0.5 A			11.2 B			17.7 B			9.6 A			
Queue Length 50th (ft)		0			4		73	119			16			
Queue Length 95th (ft)		0			47		m#314	#399			79			
Internal Link Dist (ft)		1			563		511	251			362			
Turn Bay Length (ft)					300			20.			302			
Base Capacity (vph)		802			396		383	1093			750			
Starvation Cap Reductn		0			0		0	244			0			
Spillback Cap Reductn		0			0		0	0			0			
Storage Cap Reductn		0			0		0	0			0			
Reduced v/c Ratio		0.17			0.30		0.72	0.62			0.17			
Intersection Summary														
Area Type:	Other													
Cycle Length: 80														
Actuated Cycle Length: 80		-	DET											
Offset: 0 (0%), Referenced to	o phase 2:NB	IL and 6:	SBTL, Sta	rt of Greer	1									
Natural Cycle: 90	dinata 4													
Control Type: Actuated-Coor	umated													

Control Type: Actuated-Coordinated
Maximum vic Ratio: 0.72
Intersection Signal Delay: 14.2
Intersection Capacity Utilization 59.6%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Oueue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Frankfort Street & Lovell Road **#1**ø9

Intersection LOS: B
ICU Level of Service B

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4		7	1•			4	
Volume (vph)	0	0	129	59	0	51	252	450	34	20	64	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0	
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00	
Frt		0.86			0.94		1.00	0.99			0.97	
Flt Protected		1.00			0.97		0.95	1.00			0.99	
Satd. Flow (prot)		822			1446		902	1827			1384	
Flt Permitted		1.00			0.75		0.68	1.00			0.89	
Satd. Flow (perm)		822			1108		644	1827			1241	
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	140	64	0	55	274	489	37	22	70	32
RTOR Reduction (vph)	0	112	0	0	87	0	0	2	0	0	9	0
Lane Group Flow (vph)	0	28	0	0	32	0	274	524	0	0	115	0
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		15.0			15.0		43.6	43.6			43.6	
Effective Green, g (s)		16.0			16.0		44.6	44.6			44.6	
Actuated g/C Ratio		0.20			0.20		0.56	0.56			0.56	
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0	
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0	
Lane Grp Cap (vph)		164			221		359	1018			691	
v/s Ratio Prot		c0.03						0.29				
v/s Ratio Perm					0.03		c0.43				0.09	
v/c Ratio		0.17			0.14		0.76	0.51			0.17	
Uniform Delay, d1		26.5			26.4		13.6	11.0			8.6	
Progression Factor		1.00			1.00		0.86	0.86			1.00	
Incremental Delay, d2		0.2			0.3		12.0	1.5			0.5	
Delay (s)		26.7			26.7		23.7	11.0			9.1	
Level of Service		С			С		С	В			Α	
Approach Delay (s)		26.7			26.7			15.3			9.1	
Approach LOS		С			С			В			Α	
Intersection Summary												
HCM 2000 Control Delay			17.2	HO	CM 2000 L	evel of Se	ervice		В			
HCM 2000 Volume to Capacity	ratio		0.57									
Actuated Cycle Length (s)			80.0	Sı	ım of lost t	ime (s)			15.0			
Intersection Capacity Utilization			59.6%	IC	U Level of	Service			В			
Analysis Period (min)			15									

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Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	^	7	4	ሻሻ	T T		302	41	7	
Volume (vph)	467	281	8	724	39	463	60	580	523	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	12	11	12	13	12	12	11	
Grade (%)	0%	000	0%	225			-	0%		
Storage Length (ft)		200		300	0		0		0	
Storage Lanes Taper Length (ft)		1		2 25	1		0 25		ı	
Satd. Flow (prot)	3282	1487	1776	3164	1280	0	0	2945	1516	
Flt Permitted	3202	1407	1770	0.950	1200		U	0.995	1310	
Satd. Flow (perm)	3282	1487	1776	3164	1280	0	0	2945	1516	
Right Turn on Red		Yes				Yes			Yes	
Satd. Flow (RTOR)		*40			*95				568	
Link Speed (mph)	30		30					30		
Link Distance (ft)	312		189					283		
Travel Time (s)	7.1		4.3					6.4		
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr) Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	100%	5%	7%	7%	100%	20%	80%	16%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	
Parking (#/hr)		U	- 0	- 0	U	- 0	U			
Mid-Block Traffic (%)	0%		0%					0%		
Shared Lane Traffic (%)	0,0		0.0					0.0		
Lane Group Flow (vph)	508	305	9	787	545	0	0	695	568	
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2			3		9
Permitted Phases		4			3		3		3	
Detector Phase	4	4	8	2	2		3	3	3	
Switch Phase		2.2		2.5	2.2					
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0		6.0	6.0	6.0	1.0
Minimum Split (s)	14.0	15.0	14.0	15.0	15.0		13.0	13.0	13.0	34.0
Total Split (s) Total Split (%)	16.0 14.5%	28.0 25.5%	16.0 14.5%	28.0 25.5%	28.0 25.5%		32.0 29.1%	32.0 29.1%	32.0 29.1%	34.0 31%
Total Split (%) Yellow Time (s)	3.0	3.0	3.0	3.0	25.5%		3.0	3.0	3.0	2.0
All-Red Time (s)	5.0	4.0	5.0	4.0	4.0		4.0	4.0	4.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0		4.0	-2.0	0.0	1.0
Total Lost Time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0	
Lead/Lag	0.0	Lead	0.0	Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?							9			
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effct Green (s)	25.9	59.4	25.9	27.5	59.5			27.0	25.0	
Actuated g/C Ratio	0.24	0.54	0.24	0.25	0.54			0.25	0.23	
v/c Ratio	0.66	0.37	0.02	0.99	0.74			0.96	0.73	
Control Delay	46.1	19.1	43.5	66.3	26.7			64.1	5.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	46.1	19.1	43.5	66.3	26.7			64.1	5.8	
LOS Approach Dolov	D	В	D	E	С			27.0	Α	
Approach LOS	36.0 D		43.5					37.9 D		
Approach LOS Queue Length 50th (ft)	163	77	D 5	301	278			182	0	
Queue Length 95th (ft)	m#387	m239	22	m#403	m376			167	0	
Internal Link Dist (ft)	232	111237	109	111#403	111370			203	J	
Turn Bay Length (ft)	232	200	107	300				200		
Base Capacity (vph)	772	821	417	791	736			722	783	
Starvation Cap Reductn	0	0	0	0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	
Storage Cap Reductn	0	0	0	0	0			0	0	
Reduced v/c Ratio	0.66	0.37	0.02	0.99	0.74			0.96	0.73	
Intersection Summary										
Area Type:	Other									
Cycle Length: 110	Other									
Actuated Cycle Length: 110)									
Offset: 0 (0%), Referenced		I. Start of	Green							
Natural Cycle: 130	to pridate Z.IVE	e, otari u	Sicon							
Control Type: Actuated-Coo	ordinated									
Maximum v/c Ratio: 0.99										

Maximum v/c Ratio: 0.99 Intersection Signal Delay: 42.2 Intersection Capacity Utilization 75.1% Analysis Period (min) 15 * User Entered Value Intersection LOS: D ICU Level of Service D

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.

Splits and Phases: 17: Transportation Way/SR-14 #10 & Porter St/Ramp S-A & Ramp S-D A pog **3** ø2 (R)

	→	•	←	4	۴	_	-	↓	4
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	^	7	4	ሻሻ	Ž.			414	1
Volume (vph)	467	281	8	724	39	463	60	580	523
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	13	12	12	11
Total Lost time (s)	6.0	5.0	6.0	5.0	5.0	13	12	5.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.95	1.00
Frt	1.00	0.85	1.00	1.00	0.85				0.85
FIt Protected				0.95				1.00	
	1.00	1.00	1.00		1.00				1.00
Satd. Flow (prot)	3282	1487	1776	3164	1280			2946	1516
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	3282	1487	1776	3164	1280			2946	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	305	9	787	42	503	65	630	568
RTOR Reduction (vph)	0	21	0	0	49	0	0	0	439
Lane Group Flow (vph)	508	284	9	787	496	0	0	695	129
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%
Turn Type	NA	pm+ov	NA	Prot	custom	2070	Perm	NA	Perm
Protected Phases	1NA 4	piii+0v 2	NA 8	2	2		remi	NA 3	reiiil
	4		ð	2			2	3	2
Permitted Phases	22.2	4	22.0	22.7	3		3	25.0	3
Actuated Green, G (s)	23.9	47.6	23.9	23.7	48.7			25.0	25.0
Effective Green, g (s)	25.9	51.6	25.9	25.7	52.7			27.0	25.0
Actuated g/C Ratio	0.24	0.47	0.24	0.23	0.48			0.25	0.23
Clearance Time (s)	8.0	7.0	8.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			3.0	3.0
Lane Grp Cap (vph)	772	697	418	739	671			723	344
v/s Ratio Prot	c0.15	0.10	0.01	c0.25	0.17				
v/s Ratio Perm		0.10			0.21			0.24	0.09
v/c Ratio	0.66	0.41	0.02	1.06	0.74			0.96	0.38
Uniform Delay, d1	38.0	19.2	32.3	42.1	23.1			41.0	35.9
Progression Factor	0.99	1.04	1.00	1.08	1.37			0.95	0.00
Incremental Delay, d2	1.6	0.1	0.0	42.9	2.2			24.2	0.00
Delay (s)	39.2	20.1	32.3	88.5	33.8			63.3	0.7
3 ()		20.1 C		88.5 F				63.3 E	
Level of Service	D	L	C	F	С				Α
Approach Delay (s)	32.0		32.3					35.1	
Approach LOS	С		С					D	
Intersection Summary									
HCM 2000 Control Delay			46.5	Н	ICM 2000 I	_evel of Se	ervice		D
HCM 2000 Volume to Capacity	v ratio		0.77						
Actuated Cycle Length (s)	,		110.0	S	um of lost	time (s)			19.0
Intersection Capacity Utilizatio	n		75.1%		CU Level o	. ,			D
Analysis Period (min)			15			2000			
c Critical Lane Group			13						
c Gritical Earle Group									

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ne Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3	
ne Configurations	7	↑ ↑			4T+						414	7		
lume (vph)	89	106	383	4	141	192	0	0	0	136	543	297		
eal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
ne Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
ade (%)		0%			0%			0%			0%			
orage Length (ft)	250		0	0		0	0		0	0		150		
orage Lanes	1		0	0		0	0		0	0		1		
per Length (ft)	25			25			25			25				
atd. Flow (prot)	1770	3001	0	0	2771	0	0	0	0	0	3359	1583		
Permitted	0.950	3001	Ū		0.950	· ·	Ü	·	U	U	0.990	1000		
td. Flow (perm)	1770	3001	0	0	2635	0	0	0	0	0	3359	1583		
ght Turn on Red	1770	3001	Yes	U	2033	Yes	U	U	Yes	U	3337	Yes		
		*60	162		209	162			162			323		
atd. Flow (RTOR)								30			20	323		
nk Speed (mph)		30			30						30			
nk Distance (ft)		430			1019			522			475			
avel Time (s)		9.8			23.2			11.9			10.8			
onfl. Peds. (#/hr)														
nfl. Bikes (#/hr)														
ak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
owth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
avy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%		
is Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
rking (#/hr)														
d-Block Traffic (%)		0%			0%			0%			0%			
ared Lane Traffic (%)					-,0			2.0			2,0			
ne Group Flow (vph)	97	531	0	0	366	0	0	0	0	0	738	323		
rn Type	Prot	NA	U	Perm	NA	U	U	U	U	Split	NA	pm+ov		
otected Phases	1	6		remi	2					Spiit 4	1NA 4	piii+0v 1	3	
		0		2	2					4	4	•	3	
rmitted Phases	1	,		2	2							4		
tector Phase	1	6		2	2					4	4	1		
vitch Phase														
nimum Initial (s)	6.0	10.0		10.0	10.0					6.0	6.0	6.0	1.0	
nimum Split (s)	13.0	17.0		17.0	17.0					13.0	13.0	13.0	27.0	
tal Split (s)	17.0	45.0		28.0	28.0					38.0	38.0	17.0	27.0	
tal Split (%)	15.5%	40.9%		25.5%	25.5%					34.5%	34.5%	15.5%	25%	
llow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	
-Red Time (s)	4.0	4.0		4.0	4.0					3.0	3.0	4.0	0.0	
st Time Adjust (s)	-2.0	-2.0			-2.0						-2.0	-2.0		
ital Lost Time (s)	5.0	5.0			5.0						4.0	5.0		
ad/Lag	Lead			Lag	Lag					Lag	Lag	Lead	Lead	
ad-Lag Optimize?				9	9					Yes	Yes		Yes	
ecall Mode	None	C-Max		C-Max	C-Max					None	None	None	None	
t Effct Green (s)	10.9	60.2		O Max	44.3					TVOITE	30.0	44.9	None	
tuated g/C Ratio	0.10	0.55			0.40						0.27	0.41		
: Ratio	0.10	0.33			0.40						0.27	0.41		
	64.0				13.5									
ntrol Delay		23.4									44.4	3.4		
eue Delay	0.0	0.0			0.0						0.0	0.0		
tal Delay	64.0	23.4			13.5						44.4	3.4		
S	E	C			В						D	Α		
proach Delay		29.7			13.5						32.0			
proach LOS		С			В						С			
eue Length 50th (ft)	70	97			31						254	0		
eue Length 95th (ft)	m110	174			96						312	49		
ernal Link Dist (ft)		350			939			442			395			
n Bay Length (ft)	250											150		
se Capacity (vph)	193	1668			1185						1038	850		
arvation Cap Reductn	0	0			0						0	0		
illback Cap Reductn	0	0			0						0	0		
orage Cap Reductn	0	0			0						0	0		
duced v/c Ratio	0.50	0.32			0.31						0.71	0.38		
	0.50	0.32			0.31						0.71	0.30		
ersection Summary														
а Туре:	Other													
cle Length: 110														
tuated Cycle Length: 110														
set: 0 (0%), Referenced to	nhase 2·WF	STI and 6.	FRT Start	t of Green										
tural Cycle: 80	priuse Z.VVE	unu 0.	, J(d)	, or Oreell										
turai Cycie: 80 ntrol Type: Actuated-Coord	linated													
	mated													
ximum v/c Ratio: 0.80														
					tersection									
ersection Signal Delay: 28.	nn 56 1%			IC	CU Level of	Service B	3							
ersection Signal Delay: 28. ersection Capacity Utilization	JII JU. 170													
ersection Signal Delay: 28. ersection Capacity Utilizationally alysis Period (min) 15	30.170													
ersection Signal Delay: 28. ersection Capacity Utilization														



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations	*	∱ 1≽			413						414	7	_
Volume (vph)	89	106	383	4	141	192	0	0	0	136	543	297	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0	
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00	
Frt	1.00	0.88			0.91						1.00	0.85	
Flt Protected	0.95	1.00			1.00						0.99	1.00	
Satd. Flow (prot)	1770	3002			2773						3359	1583	
Flt Permitted	0.95	1.00			0.95						0.99	1.00	
Satd. Flow (perm)	1770	3002			2635						3359	1583	
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)	97	115	416	4	153	209	0	0	0	148	590	323	
RTOR Reduction (vph)	0	28	0	0	128	0	0	0	0	0	0	203	
Lane Group Flow (vph)	97	503	0	0	238	0	0	0	0	0	738	120	
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%	
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov	
Protected Phases	1	6			2					4	4	1	
Permitted Phases				2								4	
Actuated Green, G (s)	8.9	56.4			40.5						28.0	36.9	
Effective Green, g (s)	10.9	58.4			42.5						30.0	40.9	
Actuated g/C Ratio	0.10	0.53			0.39						0.27	0.37	
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0	
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0	
Lane Grp Cap (vph)	175	1593			1018						916	588	
v/s Ratio Prot	c0.05	c0.17									c0.22	0.02	
v/s Ratio Perm					0.09							0.06	
v/c Ratio	0.55	0.32			0.23						0.81	0.20	
Uniform Delay, d1	47.2	14.5			22.8						37.3	23.5	
Progression Factor	1.12	1.48			1.00						1.00	1.00	
Incremental Delay, d2	2.0	0.5			0.5						4.9	0.1	
Delay (s)	54.8	21.9			23.3						42.2	23.6	
Level of Service	D	С			С						D	С	
Approach Delay (s)		27.0			23.3			0.0			36.5		
Approach LOS		С			С			Α			D		
Intersection Summary													
HCM 2000 Control Delay			31.3	H	CM 2000 L	evel of Se	rvice		С				
HCM 2000 Volume to Capacity	y ratio		0.48										
Actuated Cycle Length (s)			110.0		um of lost				17.0				
Intersection Capacity Utilizatio	n		56.1%	IC	U Level of	Service			В				
Analysis Period (min)			15										

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9	
Lane Configurations	LDL	LDI	77	WDL	WD1	WDIX	NDL T	INDI	NDIX	JDL	<u> </u>	JUK	WZ.	พร	107	
Volume (vph)	0	0	246	184	153	0	389	0	0	0	151	0				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12				
Grade (%)		0%	0	400	0%			0%	0	0	0%					
Storage Length (ft)	0		0	100		0	0		0	0		0				
Storage Lanes Taper Length (ft)	0 25		2	1 25		0	1 25		0	0 25		0				
Satd. Flow (prot)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0				
Flt Permitted			2170	0.950	1007		0.950									
Satd. Flow (perm)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0				
Right Turn on Red			Yes			Yes			Yes			Yes				
Satd. Flow (RTOR)			442													
Link Speed (mph)		30			30			30			30					
Link Distance (ft) Travel Time (s)		344 7.8			1001 22.8			716 16.3			257 5.8					
Confl. Peds. (#/hr)		7.0			22.0			10.3			3.0					
Confl. Bikes (#/hr)																
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0				
Parking (#/hr)		00/			00/			00/			00/					
Mid-Block Traffic (%) Shared Lane Traffic (%)		0%			0%			0%			0%					
Lane Group Flow (vph)	0	0	267	200	166	0	423	0	0	0	164	0				
Turn Type	U	U	pt+ov	pm+pt	NA	0	Prot	U	U	U	NA	Ū				
Protected Phases			3 9	1	6		3 9				4		2	3	9	
Permitted Phases			2	6												
Detector Phase			2	1	6		3				4					
Switch Phase											400					
Minimum Initial (s)				6.0 12.0	6.0 12.0						10.0 15.5		6.0 12.0	6.0 11.5	4.0 20.0	
Minimum Split (s) Total Split (s)				12.0	27.0						15.0		15.0	28.0	20.0	
Total Split (%)				13.3%	30.0%						16.7%		17%	31%	22%	
Yellow Time (s)				3.0	3.0						4.0		3.0	3.0	2.0	
All-Red Time (s)				3.0	3.0						1.5		3.0	2.5	1.0	
Lost Time Adjust (s)				-1.0	-1.0						-1.0					
Total Lost Time (s)				5.0	5.0						4.5					
Lead/Lag				Lead							Lag		Lag	Lead		
Lead-Lag Optimize? Recall Mode				None	None						None		None	None	None	
Act Effct Green (s)			36.3	19.9	19.9		23.6				10.7		None	None	None	
Actuated g/C Ratio			0.53	0.29	0.29		0.34				0.16					
v/c Ratio			0.17	0.39	0.42		0.78				0.71					
Control Delay			0.2	24.6	26.3		30.0				50.0					
Queue Delay			0.0	0.0	0.0		0.0				0.0					
Total Delay			0.2	24.6	26.3		30.0				50.0					
LOS Approach Delay			А	С	C 25.4		С				D 50.0					
Approach LOS					23.4 C						J0.0					
Queue Length 50th (ft)			0	64	54		151				64					
Queue Length 95th (ft)			0	161	143		253				#213					
Internal Link Dist (ft)		264			921			636			177					
Turn Bay Length (ft)				100												
Base Capacity (vph)			1490	508	445		626				230					
Starvation Cap Reductn			0	0	0		0				0					
Spillback Cap Reductn Storage Cap Reductn			0	0	0		0				0					
Reduced v/c Ratio			0.18	0.39	0.37		0.68				0.71					
			0	2.07	2.07											
Intersection Summary Area Type:	Other															
Cycle Length: 90	Other															
Actuated Cycle Length: 68.5																
Natural Cycle: 75																
Control Type: Actuated-Unco	ordinated															
Maximum v/c Ratio: 0.78																
Intersection Signal Delay: 24.					tersection											
Intersection Capacity Utilization	on 51.3%			IC	U Level of	Service A	4									

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

Queue shown is maximum after two cycles.

Splits and Phases: 25: Hotel Drive & SR-2/Ramp D-S **♦** ø9 **♦** ø3

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations			77	7	†		J.							
Volume (vph)	0	0	246	184	153	0	389	0	0	0	151	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.5	5.0	5.0		4.5				4.5			
Lane Util. Factor			0.88	1.00	1.00		1.00				1.00			
Frt			0.85	1.00	1.00		1.00				1.00			
Flt Protected			1.00	0.95	1.00		0.95				1.00			
Satd. Flow (prot)			2493	1752	1357		1583				1473			
Flt Permitted			1.00	0.95	1.00		0.95				1.00			
Satd. Flow (perm)			2493	1752	1357		1583				1473			
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	267	200	166	0	423	0	0	0	164	0		
RTOR Reduction (vph)	0	0	147	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	120	200	166	0	423	0	0	0	164	0		
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%		
Turn Type			pt+ov	pm+pt	NA		Prot				NA			
Protected Phases			3 9	1	6		3 9				4			
Permitted Phases			2	6							•			
Actuated Green, G (s)			31.8	18.8	18.8		25.1				9.7			
Effective Green, g (s)			31.8	19.8	19.8		24.1				10.7			
Actuated g/C Ratio			0.45	0.28	0.28		0.34				0.15			
Clearance Time (s)				6.0	6.0						5.5			
Vehicle Extension (s)				2.0	2.0						2.0			
Lane Grp Cap (vph)			1122	491	380		540				223			
v/s Ratio Prot			0.04	0.04	c0.12		c0.27				c0.11			
v/s Ratio Perm			0.01	0.07	00.12		00127				00.11			
v/c Ratio			0.11	0.41	0.44		0.78				0.74			
Uniform Delay, d1			11.2	20.6	20.8		20.9				28.6			
Progression Factor			1.00	1.00	1.00		1.00				1.00			
Incremental Delay, d2			0.0	0.2	0.3		6.8				10.3			
Delay (s)			11.2	20.8	21.1		27.7				38.9			
Level of Service			В	С	С		С				D			
Approach Delay (s)		11.2			21.0			27.7			38.9			
Approach LOS		В			С			С			D			
Intersection Summary														
HCM 2000 Control Delay			23.6	H	CM 2000 I	_evel of Se	ervice		С					
HCM 2000 Volume to Capacity rat	tio		0.73											
Actuated Cycle Length (s)			70.6	Sı	um of lost	time (s)			22.0					
Intersection Capacity Utilization			51.3%	IC	U Level o	f Service			Α					
Analysis Period (min)			15											
c Critical Lano Group														

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	
Lane Configurations		4	7	*		7		†			44			
Volume (vph)	237	52	601	154	0	112	0	41	306	169	412	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		1	1		1	0		0	0		0		
Taper Length (ft)	25			25			25			25				
Satd. Flow (prot)	0	1558	1468	1480	0	1369	0	2595	0	0	3070	0		
Flt Permitted		0.961		0.950							0.708			
Satd. Flow (perm)	0	1558	1468	1480	0	1369	0	2595	0	0	2204	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			502			122		333						
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		662			390			344			716			
Travel Time (s)		15.0			8.9			7.8			16.3			
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)		00/			00/			00/			00/			
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)	0	215	753	167	0	122	0	270	0	0	(22	0		
Lane Group Flow (vph)	0 Colit	315	653		U		U	378	U	0 Dorm	632	U		
Turn Type Protected Phases	Split 4	NA 4	Prot 4	Prot 3		Prot 3		NA 1		Perm	NA 1		2	
Permitted Phases	4	4	4	3		3		- 1		1	- 1		2	
Detector Phase	4	4	4	3		3		1		1	1			
Switch Phase	7	7	4	J		J								
Minimum Initial (s)	7.0	7.0	7.0	5.0		5.0		7.0		7.0	7.0		1.0	
Minimum Split (s)	12.0	12.0	12.0	10.0		10.0		13.0		13.0	13.0		22.0	
Total Split (s)	23.0	23.0	23.0	16.0		16.0		29.0		29.0	29.0		22.0	
Total Split (%)	25.6%	25.6%	25.6%	17.8%		17.8%		32.2%		32.2%	32.2%		24%	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0		2.0	
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0		2.0		2.0	2.0		0.0	
Lost Time Adjust (s)	110	-1.0	-1.0	-1.0		-1.0		-2.0		2.0	-2.0		0.0	
Total Lost Time (s)		4.0	4.0	4.0		4.0		4.0			4.0			
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	Lead		Lag	
Lead-Lag Optimize?	J	3	3										3	
Recall Mode	None	None	None	None		None		Min		Min	Min		None	
Act Effct Green (s)		19.0	19.0	11.7		11.7		25.3			25.3			
Actuated g/C Ratio		0.26	0.26	0.16		0.16		0.35			0.35			
v/c Ratio		0.76	0.86	0.69		0.38		0.33			0.81			
Control Delay		40.6	20.7	47.4		10.5		4.9			33.2			
Queue Delay		0.0	0.0	0.0		0.0		0.0			0.0			
Total Delay		40.6	20.7	47.4		10.5		4.9			33.2			
LOS		D	С	D		В		Α			С			
Approach Delay		27.1						4.9			33.2			
Approach LOS		С						Α			С			
Queue Length 50th (ft)		118	50	65		0		6			120			
Queue Length 95th (ft)		#341	#322	#206		49		44			#313			
Internal Link Dist (ft)		582			310			264			636			
Turn Bay Length (ft)														
Base Capacity (vph)		418	761	251		333		1132			779			
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		0.75	0.86	0.67		0.37		0.33			0.81			
Intersection Summary														
Area Type:	Other													
Cycle Length: 90														
Actuated Cycle Length: 71.7														

Actuated Cycle Length: 71.7

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 25.7

Intersection Capacity Utilization 72.0%

Analysis Period (min) 15

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

Queue shown is maximum after two cycles. Intersection LOS: C ICU Level of Service C



	•	-	•	•	-	•	4	†	~	-	ļ	✓		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4	7	*		7		† }			44			
Volume (vph)	237	52	601	154	0	112	0	41	306	169	412	0		
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		4.0			4.0			
Lane Util, Factor		1.00	1.00	1.00		1.00		0.95			0.95			
Frt		1.00	0.85	1.00		0.85		0.87			1.00			
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99			
Satd. Flow (prot)		1557	1468	1480		1369		2594			3068			
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.71			
Satd. Flow (perm)		1557	1468	1480		1369		2594			2203			
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)	258	57	653	167	0.72	122	0	45	333	184	448	0		
RTOR Reduction (vph)	0	0	372	0	0	103	0	218	0	0	0	0		
Lane Group Flow (vph)	0	315	281	167	0	20	0	160	0	0	632	0		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Turn Type	Split	NA	Prot	Prot	0,0	Prot	0,0	NA	2170	Perm	NA	0,0		
Protected Phases	4	4	4	3		3		1		1 Cilli	1			
Permitted Phases				3						1				
Actuated Green, G (s)		18.0	18.0	10.7		10.7		23.3		•	23.3			
Effective Green, g (s)		19.0	19.0	11.7		11.7		25.3			25.3			
Actuated g/C Ratio		0.26	0.26	0.16		0.16		0.35			0.35			
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0			
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0			
Lane Grp Cap (vph)		404	381	236		218		896			761			
v/s Ratio Prot		c0.20	0.19	c0.11		0.01		0.06			701			
v/s Ratio Perm		00.20	0.17	00.11		0.01		0.00			c0.29			
v/c Ratio		0.78	0.74	0.71		0.09		0.18			0.83			
Uniform Delay, d1		25.2	24.8	29.1		26.2		16.7			22.0			
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00			
Incremental Delay, d2		8.4	6.3	7.7		0.1		0.1			7.7			
Delay (s)		33.6	31.1	36.8		26.3		16.8			29.6			
Level of Service		C	С	D		C		В			C			
Approach Delay (s)		31.9			32.4	_		16.8			29.6			
Approach LOS		С			C			В			C			
Intersection Summary														
HCM 2000 Control Delay			28.8	11/	N 2000 I	evel of Se	nvico		С					
HCM 2000 Control Delay HCM 2000 Volume to Capacity ra	atio		0.74	H	JIVI ZUUU L	ever or Se	ii vice		C					
Actuated Cycle Length (s)	สแบ		73.2	Ç,	ım of lost	timo (c)			14.0					
Intersection Capacity Utilization			72.0%		IIII of lost U Level of				14.0 C					
Analysis Period (min)			12.076	IC	O FEACURE	OCI VICE			C					

Lane Group Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Width (ft) Grade (%)	EBL			†	ţ	4	
Lane Configurations Volume (vph) Ideal Flow (vphpl) Lane Width (ft) Grade (%)	2.4	EBR	NBL	NBT	SBT	SBR	ø2
Volume (vph) Ideal Flow (vphpl) Lane Width (ft) Grade (%)	W			†	†		
Lane Width (ft) Grade (%)	298	58		438	252	0	
Grade (%)	1900	1900		1900	1900	1900	
	12	12	12	12	12	12	
Character Land 11 (6)	0%	_		0%	0%		
Storage Length (ft)	0	0				0	
Storage Lanes	1	0				0	
Taper Length (ft)	25 1723	0	25 0	1452	1610	0	
Satd. Flow (prot) Flt Permitted	0.960	0	0	1652	1610	U	
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red	1/23	Yes		1002	1010	Yes	
Satd. Flow (RTOR)	13	162				162	
Link Speed (mph)	30			30	30		
Link Distance (ft)	499			417	331		
Travel Time (s)	11.3			9.5	7.5		
Confl. Peds. (#/hr)	11.5			7.0	7.0		
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%		100%	100%	100%	
Heavy Vehicles (%)	4%	1%		15%	18%	0%	
Bus Blockages (#/hr)	0	0		0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)	- 0.0			0.0	0.0		
Lane Group Flow (vph)	387	0	0	476	274	0	
Turn Type	Perm	0		NA	NA		
Protected Phases				1	1		2
Permitted Phases	3						
Detector Phase	3			1	1		
Switch Phase							
Minimum Initial (s)	8.0			8.0	8.0		4.0
Minimum Split (s)	13.0			13.0	13.0		19.0
Total Split (s)	30.0			30.0	30.0		20.0
Total Split (%)	37.5%			37.5%	37.5%		25%
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		1.0
Lost Time Adjust (s)	-1.0			-1.0	-1.0		
Total Lost Time (s)	4.0			4.0	4.0		
Lead/Lag				Lead	Lead		Lag
Lead-Lag Optimize?				Yes	Yes		Yes
Recall Mode	None			C-Max	C-Max		None
Act Effct Green (s)	22.0			46.2	46.2		
Actuated g/C Ratio	0.28			0.58	0.58		
v/c Ratio	0.80			0.50	0.29		
Control Delay	38.5			16.9	11.4		
Queue Delay	0.3			0.0	0.3		
Total Delay	38.8			16.9	11.7		
LOS	D			В	В		
Approach Delay	38.8			16.9	11.7		
Approach LOS	D 171			B	B		
Queue Length 50th (ft)	171			115	46		
Queue Length 95th (ft) Internal Link Dist (ft)	252 419			#398 337	185 251		
Turn Bay Length (ft)	717			331	231		
Base Capacity (vph)	572			953	929		
Starvation Cap Reductn	0			0	255		
Spillback Cap Reductn	20			21	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.70			0.51	0.41		
Intersection Summary							
	Other						
Cycle Length: 80	_ 11101						
Actuated Cycle Length: 80	to phase 1:N	NBSB, S	art of Gree	en			
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced	·						
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced I Natural Cycle: 65	anaton						
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced I Natural Cycle: 65 Control Type: Actuated-Coordi	ilitateu						
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced I Natural Cycle: 65 Control Type: Actuated-Coordi Maximum v/c Ratio: 0.80					torcontion	LOSEC	
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced I Natural Cycle: 65 Control Type: Actuated-Coordi Maximum v/c Ratio: 0.80 Intersection Signal Delay: 23.1	1				ntersection		
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced I Natural Cycle: 65 Control Type: Actuated-Coordi Maximum v/c Ratio: 0.80 Intersection Signal Delay: 23.1 Intersection Capacity Utilizatio	1				CU Level of		
Actuated Cycle Length: 80	1 on 49.8%			10			

Splits and Phases: 33: SR-2/Frankfort Street & Route 1A NB Off-Ramp

	۶	•	1	†	 	4
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥	LDIN		<u>↑</u>	<u> </u>	55.1
Volume (vph)	298	58	0	438	252	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	1700	1700	4.0	4.0	1700
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	1.00	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1723			1652	1610	
Flt Permitted	0.96			1.00	1.00	
Satd. Flow (perm)	1723			1652	1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	63	0.72	476	274	0
RTOR Reduction (vph)	9	0	0	0	0	0
Lane Group Flow (vph)	378	0	0	476	274	0
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%
Turn Type	Perm			NA	NA	
Protected Phases	. 5			1	1	
Permitted Phases	3					
Actuated Green, G (s)	21.0			42.8	42.8	
Effective Green, g (s)	22.0			43.8	43.8	
Actuated g/C Ratio	0.28			0.55	0.55	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	473			904	881	
v/s Ratio Prot	173			c0.29	0.17	
v/s Ratio Perm	c0.22			30.27	0.17	
v/c Ratio	0.80			0.53	0.31	
Uniform Delay, d1	26.9			11.5	9.9	
Progression Factor	1.00			1.00	0.87	
Incremental Delay, d2	8.5			2.2	0.9	
Delay (s)	35.5			13.7	9.5	
Level of Service	D			В	A	
Approach Delay (s)	35.5			13.7	9.5	
Approach LOS	D			В	A	
Intersection Summary			00.4		21.1.0005	1.60
HCM 2000 Control Delay			20.1	HC	JM 2000 L	evel of Service
HCM 2000 Volume to Capac	city ratio		0.60	^	61	! (-)
Actuated Cycle Length (s)			80.0		ım of lost t	
Intersection Capacity Utilizat	tion		49.8%	IC	U Level of	Service
Analysis Period (min)			15			

	~	₹	×	~	Ĺ	×
Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	*	7	1>			4
Volume (vph)	77	47	391	69	24	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	200		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1367	1188	1604	0	0	1660
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1367	1188	1604	0	0	1660
Link Speed (mph)	30		30			30
Link Distance (ft)	331		958			417
Travel Time (s)	7.5		21.8			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	32%	36%	18%	5%	38%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	51	500	0	0	337
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized	54101					
Intersection Capacity Utilizat	ion 45.8%			IC	III evel n	f Service A
Analysis Period (min) 15	1011 10.070			10	- LCVCI U	JOI VICE F
raidigoso i citod (min) 10						

	7	*	×	7	(<u>/</u>
Movement	NWL	NWR	NET	NER	SWL S	SWT
Lane Configurations	7	7	f)			4
Volume (veh/h)	77	47	391	69	24	286
Sign Control	Stop	.,	Free	- 0,		Free
Grade	0%		0%		'	0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	84	51	425	75		311
Pedestrians	07	- 51	120	,,,	20	011
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type		U	None		N	lone
Median storage veh)			NONE		1,	IUIIC
Upstream signal (ft)						417
pX, platoon unblocked	0.93					417
vC, conflicting volume	826	462			500	
vC1, stage 1 conf vol	020	402			500	
vC2, stage 2 conf vol						
vCz, stage z coni voi vCu, unblocked vol	770	462			500	
	772 6.7	462 6.6			4.5	
tC, single (s)	6.7	0.0			4.5	
tC, 2 stage (s)	0.0	0.7			0.5	
tF (s)	3.8	3.6			2.5	
p0 queue free %	72	90			97	
cM capacity (veh/h)	296	535			902	
Direction, Lane #	NW 1	NE 1	SW 1			
Volume Total	135	500	337			
Volume Left	84	0	26			
Volume Right	51	75	0			
cSH	476	1700	902			
Volume to Capacity	0.28	0.29	0.03			
Queue Length 95th (ft)	29	0	2			
Control Delay (s)	18.3	0.0	1.0			
Lane LOS	С		Α			
Approach Delay (s)	18.3	0.0	1.0			
Approach LOS	С					
Intersection Summary						
			2.9			
Average Delay			45.8%	10	CU Level of Se	
Intersection Capacity Utilization				IC	o reveror 26	vice
Analysis Period (min)			15			

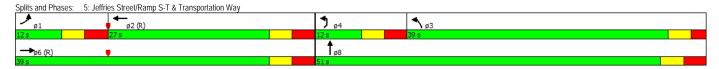
	•	•	•	†		4
Lane Group	EDI	EBR			SBT	SBR
Lane Group Lane Configurations	EBL TY	ERK	NBL	NBT 4 ↑	↑ ↑	SBK
Volume (vph)	71 T	8	8	4 T 139	T № 48	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	3403	0	0	3529	3274	0
Flt Permitted	0.957	0	0	0.932	2274	0
Satd. Flow (perm)	3403	0 Voc	0	3299	3274	0
Right Turn on Red Satd. Flow (RTOR)	9	Yes			52	Yes
Link Speed (mph)	30			30	30	
Link Distance (ft)	361			895	973	
Travel Time (s)	8.2			20.3	22.1	
Confl. Peds. (#/hr)	0.2			20.0		
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	0	0	160	104	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4		,	6	2	
Permitted Phases	A		6		2	
Detector Phase Switch Phase	4		6	6	2	
Minimum Initial (s)	15.0		6.0	6.0	6.0	
Minimum Split (s)	20.0		11.0	11.0	20.0	
Total Split (s)	45.0		22.0	22.0	22.0	
Total Split (%)	67.2%		32.8%	32.8%	32.8%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		None	None	None	
Act Effct Green (s)	17.6			9.7	9.7	
Actuated g/C Ratio	0.76			0.42	0.42	
V/c Ratio	0.03 4.2			0.12 6.5	0.07	
Control Delay	4.2 0.0			0.0	4.5 0.0	
Queue Delay Total Delay	4.2			6.5	4.5	
LOS	4.2 A			6.5 A	4.5 A	
Approach Delay	4.2			6.5	4.5	
Approach LOS	4.2 A			0.5 A	4.5 A	
Queue Length 50th (ft)	0			0	0	
Queue Length 95th (ft)	13			23	13	
Internal Link Dist (ft)	281			815	893	
Turn Bay Length (ft)				3.0	3.0	
Base Capacity (vph)	3403			2656	2645	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.03			0.06	0.04	
Intersection Summary						
Area Type:	Other					
Cycle Length: 67	Otnei					
Actuated Cycle Length: 23.1						
Natural Cycle: 40						
Control Type: Actuated-Unco	ordinated					
Maximum v/c Ratio: 0.12	orumateu					
Intersection Signal Delay: 5.4				In	tersection	LOS: A
Intersection Capacity Utilizati					U Level of	
Analysis Period (min) 15	5.070			.0	0.0101	
Jana 1 2.1.20 (11111) 10						
Splits and Phases: 86: Har	borside Drive	e & Hyatt [Drive			
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▼ ø2					94	
22 s					45 s	
↑ ø6						
1 Øb 22 s					l	

					-	
	•	•	1	†	. ↓	4
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	AAA			41	∱ ∱	
Volume (vph)	71	8	8	139	48	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.98			1.00	0.93	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	3405			3529	3274	
Flt Permitted	0.96			0.93	1.00	
Satd. Flow (perm)	3405			3297	3274	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	9	9	151	52	52
RTOR Reduction (vph)	7	0	0	0	36	0
Lane Group Flow (vph)	79	0	0	160	68	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Actuated Green, G (s)	3.9			4.8	4.8	
Effective Green, g (s)	4.9			5.8	5.8	
Actuated g/C Ratio	0.26			0.31	0.31	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			2.0	2.0	
Lane Grp Cap (vph)	892			1022	1015	
v/s Ratio Prot	c0.02				0.02	
v/s Ratio Perm	30.02			c0.05	2.02	
v/c Ratio	0.09			0.16	0.07	
Uniform Delay, d1	5.2			4.7	4.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.0	0.0	
Delay (s)	5.3			4.7	4.6	
Level of Service	Α			A	A	
Approach Delay (s)	5.3			4.7	4.6	
Approach LOS	3.5 A			Α.7	4.0 A	
• •	^			,,	,,	
Intersection Summary						
HCM 2000 Control Delay			4.8	HO	CM 2000 L	evel of Service
HCM 2000 Volume to Capa	city ratio		0.13			
Actuated Cycle Length (s)			18.7		um of lost t	
Intersection Capacity Utiliza	tion		26.6%	IC	U Level of	Service
Analysis Period (min)			15			
c Critical Lane Group						

•	•	†	~	>	↓
WBL	WBR	NBT	NBR	SBL	SBT
¥4f		1>			44
114	7	416	126	7	175
1900	1900	1900	1900	1900	1900
12	12	12	12	12	12
0%		0%			0%
0	0		0	0	
1	0		0	0	
25				25	
1765	0	1805	0	0	3532
					0.998
	0		0	0	3532
30		30			30
78		344			228
1.8		7.8			5.2
					0.92
					100%
					2%
0	0	0	0	0	0
0%		0%			0%
	0		0	0	198
Stop		Free			Free
Other					
on 43.0%			IC	U Level o	f Service A
	WBL 114 1900 12 0% 0 0 1 25 1765 0.955 1765 30 78 1.8 0.92 100% 2% 0 0%	WBL WBR 114 7 1900 1900 12 12 0% 0 0 0 1 0 0 25 1765 0 0.955 1765 0 30 78 1.8 0.92 0.92 100% 100% 2% 2% 0 0 0% 132 0 Stop Other	WBL WBR NBT 114 7 416 1900 1900 1900 12 12 12 0% 0% 0 0 1 0 25 1765 0 1805 30 30 78 344 1.8 7.8 0.92 0.92 0.92 100% 100% 2% 2% 2% 0 0 0 0% 0% 132 0 589 Stop Free	WBL WBR NBT NBR 114 7 416 126 1900 1900 1900 1900 12 12 12 12 0 0 0 0 1 0 0 0 25 0 1805 0 1765 0 1805 0 30 30 30 30 78 344 1.8 7.8 0.92 0.92 0.92 0.92 100% 100% 100% 20% 2% 2% 2% 2% 0 0 0 0 132 0 589 0 Stop Free Other	WBL WBR NBT NBR SBL 114 7 416 126 7 1900 1900 1900 1900 1900 12 12 12 12 12 0% 0% 0 0 0 1 0 0 0 0 25 25 25 25 1765 0 1805 0 0 30 30 30 30 78 344 1.8 7.8 0.92 0.92 0.92 0.92 0.92 100% 100% 100% 100% 2% 2% 2% 0 0 0 0 0 0 0 0 132 0 589 0 0 0 0 Stop Free COther 100 0 0 0 0

	•	•	†	~	\	Ţ
Movement	WBL	WBR	NBT	NBR		SBT
Lane Configurations	₩.	WDIX	î î	NDIX		<u>-</u> 4↑
Volume (veh/h)	114	7	416	126	7	4T
		1		120		Free
Sign Control Grade	Stop 0%		Free 0%			0%
		0.00		0.00	0.00	
Peak Hour Factor	0.92	0.92	0.92	0.92		0.92
Hourly flow rate (vph)	124	8	452	137	8	190
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		1	lone
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	631	521			589	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	572	454			528	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	0.0	0.7				
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	99			99	
cM capacity (veh/h)	418	518			970	
civi capacity (veri/ii)	410	010			970	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	132	589	71	127		
Volume Left	124	0	8	0		
Volume Right	8	137	0	0		
cSH	423	1700	970	1700		
Volume to Capacity	0.31	0.35	0.01	0.07		
Queue Length 95th (ft)	33	0.55	1	0.07		
Control Delay (s)	17.3	0.0	1.0	0.0		
Lane LOS	C	0.0	Α	0.0		
Approach Delay (s)	17.3	0.0	0.4			
Approach LOS	17.3 C	0.0	0.4			
Approach LOS	C					
Intersection Summary						
Average Delay			2.6			
Average Delay Intersection Capacity Utilization			2.6 43.0%	ICI	U Level of Se	rvice
Average Delay				ICI	U Level of Se	rvice

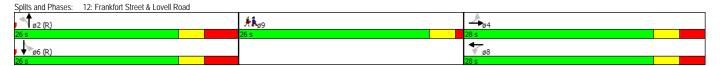
Tigurations		۶	→	→	←	•	•	†	<i>></i>	•
ph) 63 623 172 86 618 923 33 39 9 140	Lane Group	EBL				WBR	NBL		NBR	
(Yophp)	Lane Configurations									
In (fig) 11 12 12 12 11 11 12 12 13 angle (fig) 0 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0	Volume (vph)									
neght (fft) 200	Ideal Flow (vphpl) Lane Width (ft)									
angsh (ft)	Cane width (ft) Grade (%)	- 11				12	- 11		12	13
ances	Storage Length (ft)	200	0,0	5.5	070	0	0	370	0	
Cyron 1662 3505 3156 0 1728 3556 0 933 ed 0.950	Storage Lanes	1					1			
ed	Taper Length (ft)									
/ (perm) 1662 3505 3156 0 1728 3556 0 933 765 1728	Satd. Flow (prot)		3505	3505	3156	0		3556	0	
Ves	Flt Permitted		2505	2505	2157	0		2557	0	
\(\text{V(RT)(R)} \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Satd. Flow (perm) Right Turn on Red	1662	3505	ახსხ	3156		1728	3556		933
A	Satd. Flow (RTOR)				03	res		4	res	
nce (ft)	Sata. Flow (RTOR) Link Speed (mph)		30	30						
is. (s/hr)	Link Distance (ft)									
Is. (#/hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#hr) st (#	Travel Time (s)									
as (#hh) r Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 0.92	Confl. Peds. (#/hr)									
Interest 100% 100	Confl. Bikes (#/hr)									
nicles (%) 5% 3% 4% 18% 1% 1% 1% 100% ages (#hr) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak Hour Factor									
ages (#/hr)	Growth Factor									
First (%)	Heavy Vehicles (%)									
Traffic (%)	Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0
ne Traffic (%) up Flow (vph)	Parking (#/hr)		20/	00/	00/			00/		
pp Flow (vph)	Mid-Block Traffic (%)		0%	0%	0%			0%		
Prot NA NA Prot NA Prot Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 3 8 8 4 4 Phases 1 6 2 4 0 4 12 0 10 0 10 0 10 0 10 0 10 0 1	Shared Lane Traffic (%) Lane Group Flow (vph)	0.3	677	677	280	0	672	1020	٥	12
Phases	Turn Type					U			U	
Phases Phase 1 6 2 3 8 8 4 ase initial (s) 6.0 10.0 10.0 10.0 6.0 6.0 Split (s) 12.0 16.0 27.0 15.0 24.0 12.0 (s) 12.0 39.0 27.0 39.0 51.0 12.0 (%) 13.3% 43.3% 30.0% 43.3% 56.7% 13.3% ine (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 ine (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Protected Phases									
Palase 1 6 2 3 8 4 4 ase ase ase 1 6 0 10.0 10.0 10.0 6.0 6.0 Split (s) 12.0 16.0 27.0 15.0 24.0 12.0 (s) 12.0 39.0 27.0 39.0 51.0 12.0 (%) 13.3% 43.3% 30.0% 43.3% 56.7% 13.3% ne (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Permitted Phases	'	U	3			3	0		7
ase initial (s) 6.0 10.0 10.0 10.0 10.0 6.0 6.0 (s) 12.0 16.0 27.0 15.0 24.0 12.0 (s) 12.0 39.0 27.0 39.0 51.0 12.0 (%) 13.3% 43.3% 30.0% 43.3% 56.7% 13.3% ine (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Detector Phase	1	6	6	2		3	8		4
Split (s)	Switch Phase									
(s) 12.0 39.0 27.0 39.0 51.0 12.0 (%) 13.3% 43.3% 30.0% 43.3% 56.7% 13.3% me (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Minimum Initial (s)									
(%) 13.3% 43.3% 30.0% 43.3% 56.7% 13.3% ne (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Minimum Split (s)									
ne (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Total Split (s)									
me (s) 3.0 3.0 3.0 2.0 3.0 3.0 3.0 3.0 Adjust (s) -2.0 -2.0 -2.0 -2.0 -2.0 -2.0 -2.0 -2.0	Total Split (%) Yellow Time (s)									
Adjust (s)	All-Red Time (s)									
Time (s)	Lost Time Adjust (s)									
Lead	Total Lost Time (s)									
Optimize? de	Lead/Lag		1.0					0		
Recen (s) 8.1 38.4 28.7 37.4 43.6 8.0 y/C Ratio 0.09 0.43 0.32 0.42 0.48 0.09 0.46 0.45 0.26 0.94 0.60 0.51 o.46 0.45 0.26 0.94 0.60 0.51 o.47 0.48 0.09 0.48 0.09 0.48 0.09 0.48 0.09 0.48 0.09 0.48 0.09 0.51 o.48 0.09 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Lead-Lag Optimize?									
y/C Ratio	Recall Mode									
0.46	Act Effct Green (s)									
Alay 46.7 29.8 18.2 48.7 18.1 62.3 lay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 y 46.7 29.8 18.2 48.7 18.1 62.3 ***Part of the content o	Actuated g/C Ratio									
lay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.	v/c Ratio Control Delay									
y	Queue Delay									
Delay 31.4 18.2 30.1 LOS C B C B C Right 50th (ft) 41 197 44 362 193 23 ngth 95th (ft) m72 208 83 #606 261 #68 nk Dist (ft) 80 562 90 Length (ft) 200 acity (vph) 149 1497 1070 717 1859 82 Cap Reductn 0 0 0 0 0 0 0 0 Cap Reductn 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 by Cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0 0 0 0 0 0 cap Reductn 0 0 0 0 0	Total Delay		29.8	29.8						
LOS	LOS	D					D			Е
ngth 50th (ft)	Approach Delay									
ngth 95th (ft) m72 208 83 #606 261 #68 nk Dist (ft) 80 562 90 Length (ft) 200 active (vph) 149 1497 1070 717 1859 82 Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Approach LOS									
nk Dist (ft) 80 562 90 Length (ft) 200 activ (vph) 149 1497 1070 717 1859 82 Cap Reducth 0 0 0 0 0 0 0 0 Cap Reducth 0 0 0 0 0 0 0 0 ap Reducth 0 0 0 0 0 0 0 0 ap Reducth 0 0 0 0 0 0 0 0 ap Reducth 0 0 0 0 0 0 0 0 by cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 by cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 0 0 0 cap Reducth 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Queue Length 50th (ft)									
Length (ft) 200 acity (vph) 149 1497 1070 717 1859 82 Cap Reductn 0 0 0 0 0 0 0 0 Cap Reductn 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 0 ap Reductn 0 0 0 0 0 0 0 0 0 by/c Ratio 0.46 0.45 0.26 0.94 0.56 0.51 IN Summary IN SUMMARY	Queue Length 95th (ft)	m72					#606			#68
acity (vph) 149 1497 1070 717 1859 82 Cap Reducth 0 0 0 0 0 0 0 Cap Reducth 0 0 0 0 0 0 0 Cap Reducth 0 0 0 0 0 0 0 0 Ale Ratio 0.46 0.45 0.26 0.94 0.56 0.51 IN Summary IS Other IS	Internal Link Dist (ft) Turn Bay Length (ft)	200	80	80	562			90		
Cap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Base Capacity (vph)		1497	1497	1070		717	1859		82
ap Reductn 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Starvation Cap Reductn									0
vic Ratio 0.46 0.45 0.26 0.94 0.56 0.51 In Summary It: Other Ight: 90 Oycle Length: 90 Oycle, Referenced to phase 2:WBT and 6:EBT, Start of Green Incle: 90 Incle: 90 Incle: 90 Incle: 90 Intersection LOS: C Inte	Spillback Cap Reductn									
in Summary :: Other gth: 90 2ycle Length: 90	Storage Cap Reductn									
c: Other gth: 90 Cycle Length: 90 Cycle Length: 90 Obly, Referenced to phase 2:WBT and 6:EBT, Start of Green cycle: 90 pe: Actuated-Coordinated v/c Ratio: 0.94 in Signal Delay: 29.8 intersection LOS: C in Capacity Utilization 64.8% ICU Level of Service C reriod (min) 15 ercentile volume exceeds capacity, queue may be longer.	Reduced v/c Ratio	0.46	0.45	0.45	0.26		0.94	0.56		0.51
gth: 90 Cycle Length: 90 Cycle: 9	Intersection Summary									
Sycle Length: 90 O%), Referenced to phase 2:WBT and 6:EBT, Start of Green vice: 90 pe: Actuated-Coordinated v/c Ratio: 0.94 in Signal Delay: 29.8 Intersection LOS: C in Capacity Utilization 64.8% ICU Level of Service C veriod (min) 15 ercentile volume exceeds capacity, queue may be longer.	Area Type:	Other								
0%), Referenced to phase 2:WBT and 6:EBT, Start of Green rcle: 90 pe: Actuated-Coordinated v/c Ratio: 0.94 in Signal Delay: 29.8 in Capacity Utilization 64.8% ICU Level of Service C reriod (min) 15 ercentile volume exceeds capacity, queue may be longer.	Cycle Length: 90									
rcle: 90 rpe: Actuated-Coordinated v/c Ratio: 0,94 in Signal Delay: 29.8 in Capacity Utilization 64.8% in Culture of Service C reriod (min) 15 ercentile volume exceeds capacity, queue may be longer.	Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to	o phase 2:WF	3T and 6·F	and 6:FR	T. Start o	of Green				
rpe: Actuated-Coordinated v/c Ratio: 0.94 In Signal Delay: 29.8 Intersection LOS: C Intersection LOS: C Intersection LOS: C ICU Level of Service C	Natural Cycle: 90	o priase 2:WE	or anu o:E	anu O.E.B	ıı, əldil C	n Green				
. Vic Ratio: 0.94 In Signal Delay: 29.8 In Capacity Utilization 64.8% ICU Level of Service C Period (min) 15 Intersection LOS: C ICU Level of Service C ICU Level of Service C	Control Type: Actuated-Coor	rdinated								
In Signal Delay: 29.8 Intersection LOS: C In Capacity Utilization 64.8% ICU Level of Service C Period (min) 15 ercentile volume exceeds capacity, queue may be longer.	Maximum v/c Ratio: 0.94									
on Capacity Utilization 64.8% ICU Level of Service C Period (min) 15 ercentile volume exceeds capacity, queue may be longer.	ntersection Signal Delay: 29	9.8				Int	ersection	LOS: C		
ercentile volume exceeds capacity, queue may be longer.		tion 64.8%							;	
	Analysis Period (min) 15									
shown is maximum after two cycles.					nay be lo	nger.				
ne for 95th percentile queue is metered by upstream signal.										



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Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	*	^	↑ 1>		*	† 1>		*
Volume (vph)	63	623	172	86	618	923	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	12	1700	12	1700	12	12	13
Total Lost time (s)	4.0	4.0	4.0	12	3.0	4.0	12	4.0
Lane Util. Factor	1.00	0.95	0.95		1.00	0.95		1.00
			0.95			0.99		1.00
Frt Elt Droto stad	1.00	1.00			1.00			
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1662	3505	3157		1728	3556		933
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1662	3505	3157		1728	3556		933
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	677	187	93	672	1003	36	42
RTOR Reduction (vph)	0	0	67	0	0	3	0	0
Lane Group Flow (vph)	68	677	213	0	672	1036	0	42
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
Turn Type	Prot	NA	NA		Prot	NA		Prot
Protected Phases	1	6	2		3	8		4
Permitted Phases	•	U	2		J	U		7
Actuated Green, G (s)	4.9	34.0	23.1		35.4	44.0		3.6
Effective Green, g (s)	6.9	36.0	25.1		37.4	44.0		5.6
Actuated g/C Ratio	0.08	0.40	0.28		0.42	0.51		0.06
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0
Lane Grp Cap (vph)	127	1402	880		718	1817		58
v/s Ratio Prot	0.04	c0.19	0.07		c0.39	0.29		c0.05
v/s Ratio Perm								
v/c Ratio	0.54	0.48	0.24		0.94	0.57		0.72
Uniform Delay, d1	40.0	20.1	25.1		25.2	15.2		41.4
Progression Factor	0.97	1.50	1.03		1.00	1.00		1.00
Incremental Delay, d2	1.8	1.0	0.6		19.4	0.4		35.9
Delay (s)	40.6	31.1	26.5		44.6	15.6		77.3
Level of Service	70.0 D	C	20.5 C		TT.0	В		77.5 E
Approach Delay (s)	U	31.9	26.5		U	27.0		
Approach LOS		31.9 C	26.5 C			27.0 C		
- ' '		C	C			C		
Intersection Summary								
HCM 2000 Control Delay			29.0	H	CM 2000 L	evel of Se	rvice	
HCM 2000 Volume to Capacit	ty ratio		0.75					
Actuated Cycle Length (s)			90.0	Sı	um of lost t	ime (s)		
Intersection Capacity Utilization	on		64.8%	IC	U Level of	Service		
Analysis Period (min)			15					
c Critical Lane Group								

	•	→	•	•	1	•	4	<u>†</u>	~	<u> </u>	1	1		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9	
Lane Configurations	LDL	4	LDIX	WDL	4	WDIC	NO.	<u>₽</u>	NDIX	JDL	4	JUK	907	<u> </u>
Volume (vph)	0	0	61	93	0	78	128	269	20	30	101	46		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)	_	0%		_	0%	_	_	0%	_		0%	_		
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes Taper Length (ft)	0 25		0	0 25		0	1 25		0	0 25		0		
Satd. Flow (prot)	0	822	0	0	1447	0	902	1826	0	0	1385	0		
Flt Permitted	0	022	U	U	0.795	U	0.672	1020	U	U	0.912	U		
Satd. Flow (perm)	0	822	0	0	1181	0	638	1826	0	0	1273	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)		729			109			5			21			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		70			643			331			442			
Travel Time (s) Confl. Peds. (#/hr)		1.6			14.6			7.5			10.0			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)					40/		400	044		0	400			
Lane Group Flow (vph)	0	66	0	0	186	0	139	314	0	0	193	0		
Turn Type Protected Phases		NA 4		Perm	NA 8		Perm	NA 2		Perm	NA 6		9	
Permitted Phases	4	4		8	0		2	2		6	0		7	
Detector Phase	4	4		8	8		2	2		6	6			
Switch Phase	•	•		_	_		_	_		-	-			
Minimum Initial (s)	6.0	6.0		15.0	15.0		6.0	6.0		6.0	6.0		4.0	
Minimum Split (s)	12.0	12.0		21.0	21.0		13.0	13.0		13.0	13.0		26.0	
Total Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0		26.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		32.5%	32.5%		32.5%	32.5%		33%	
Yellow Time (s)	3.0	3.0 3.0		3.0	3.0		3.0	3.0 4.0		3.0	3.0 4.0		3.0 1.0	
All-Red Time (s) Lost Time Adjust (s)	3.0	-1.0		3.0	-1.0		4.0 -1.0	-1.0		4.0	-1.0		1.0	
Total Lost Time (s)		5.0			5.0		6.0	6.0			6.0			
Lead/Lag		0.0			0.0		0.0	0.0			0.0			
Lead-Lag Optimize?														
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None	
Act Effct Green (s)		16.9			16.9		46.9	46.9			46.9			
Actuated g/C Ratio		0.21			0.21		0.59	0.59			0.59			
v/c Ratio		0.09			0.56		0.37	0.29			0.26			
Control Delay Queue Delay		0.2			19.1 0.0		16.2 0.0	9.0 0.4			12.0 0.0			
Total Delay		0.0			19.1		16.2	9.4			12.0			
LOS		Α.2			В		В	Α.			12.0 B			
Approach Delay		0.2			19.1			11.5			12.0			
Approach LOS		Α			В			В			В			
Queue Length 50th (ft)		0			33		36	78			29			
Queue Length 95th (ft)		0			90		#165	143			136			
Internal Link Dist (ft)		1			563			251			362			
Turn Bay Length (ft)		755			417		272	1072			755			
Base Capacity (vph) Starvation Cap Reductn		755 0			417 0		373 0	1072 366			755 0			
Spillback Cap Reductn		0			0		0	0			0			
Storage Cap Reductn		0			0		0	0			0			
Reduced v/c Ratio		0.09			0.45		0.37	0.44			0.26			
Intersection Summary														
	Other													
Cycle Length: 80														
Actuated Cycle Length: 80	phone O.N.D.	TI ord ()	CDTI CL	t of C	Moster	atoroc at!								
Offset: 0 (0%), Referenced to Natural Cycle: 75	priase Z:NB	I L dilu 0:3	DDIL, SIBI	i oi Green	i, iviaster II	irei zectiot	ı							
Control Type: Actuated-Coord	linated													
Maximum v/c Ratio: 0.56														
Intersection Signal Delay: 12.4	4			In	tersection	LOS: B								

Intersection Signal Delay: 12.4
Intersection Capacity Utilization 55.9%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles. Intersection LOS: B
ICU Level of Service B



	ᄼ	-	•	•	•	•	1	†	1	-	↓	4		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4			4		ሻ	1			4			
Volume (vph)	0	0	61	93	0	78	128	269	20	30	101	46		
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0			
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00			
Frt		0.86			0.94		1.00	0.99			0.97			
Flt Protected		1.00			0.97		0.95	1.00			0.99			
Satd. Flow (prot)		822			1446		902	1827			1384			
Flt Permitted		1.00			0.79		0.67	1.00			0.91			
Satd. Flow (perm)		822			1181		638	1827			1273			
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	66	101	0	85	139	292	22	33	110	50		
RTOR Reduction (vph)	0	52	0	0	86	0	0	2	0	0	10	0		
Lane Group Flow (vph)	0	14	0	0	100	0	139	312	0	0	183	0		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4			8			2			6				
Actuated Green, G (s)		15.9			15.9		42.7	42.7			42.7			
Effective Green, q (s)		16.9			16.9		43.7	43.7			43.7			
Actuated g/C Ratio		0.21			0.21		0.55	0.55			0.55			
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0			
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0			
Lane Grp Cap (vph)		173			249		348	997			695			
v/s Ratio Prot		0.02						0.17						
v/s Ratio Perm					c0.08		c0.22				0.14			
v/c Ratio		0.08			0.40		0.40	0.31			0.26			
Uniform Delay, d1		25.3			27.2		10.5	9.9			9.6			
Progression Factor		1.00			1.00		0.73	0.70			1.00			
Incremental Delay, d2		0.1			1.1		3.3	0.8			0.9			
Delay (s)		25.4			28.3		11.0	7.8			10.5			
Level of Service		С			С		В	Α			В			
Approach Delay (s)		25.4			28.3			8.7			10.5			
Approach LOS		С			С			Α			В			
Intersection Summary														
HCM 2000 Control Delay			14.4	H	CM 2000 L	evel of Se	ervice		В					
HCM 2000 Volume to Capacity rat	io		0.37											
Actuated Cycle Length (s)			80.0		um of lost t				15.0					
Intersection Capacity Utilization			55.9%	IC	U Level of	Service			В					
Analysis Period (min)			15											

	-	•	←	4	*	-	\	ţ	4	
Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	^	7	4	ሻሻ	Ž.			414	7	
Volume (vph)	395	288	8	541	26	298	36	399	328	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	12	11	12	13	12	12	11	
Grade (%)	0%		0%					0%		
Storage Length (ft)		200		300	0		0		0	
Storage Lanes		1		2	1		0		1	
Taper Length (ft)	2000	1.07	4777	25	1070	_	25	2015	4547	
Satd. Flow (prot)	3282	1487	1776	3164	1278	0	0	2965	1516	
Flt Permitted	2202	1407	177/	0.950	1070	0	0	0.996	151/	
Satd. Flow (perm)	3282	1487	1776	3164	1278	0	0	2965	1516	
Right Turn on Red		Yes			*05	Yes			Yes	
Satd. Flow (RTOR)	20	*40	20		*95			20	357	
Link Speed (mph)	30		30					30		
Link Distance (ft)	312		189					283		
Travel Time (s)	7.1		4.3					6.4		
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	
Parking (#/hr)										
Mid-Block Traffic (%)	0%		0%					0%		
Shared Lane Traffic (%)						_				
Lane Group Flow (vph)	429	313	9	588	352	0	0	473	357	
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2			3		9
Permitted Phases		4			3		3		3	
Detector Phase	4	4	8	2	2		3	3	3	
Switch Phase										
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0		6.0	6.0	6.0	4.0
Minimum Split (s)	14.0	15.0	14.0	15.0	15.0		13.0	13.0	13.0	34.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		26.0	26.0	26.0	34.0
Total Split (%)	16.7%	16.7%	16.7%	16.7%	16.7%		28.9%	28.9%	28.9%	38%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	2.0
All-Red Time (s)	5.0	4.0	5.0	4.0	4.0		4.0	4.0	4.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0	
Lead/Lag	0.0	Lead	0.0	Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?							9	9	9	
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effct Green (s)	21.0	53.3	21.0	26.3	51.2			19.9	17.9	. 10.10
Actuated g/C Ratio	0.23	0.59	0.23	0.29	0.57			0.22	0.20	
v/c Ratio	0.23	0.35	0.23	0.29	0.37			0.22	0.20	
Control Delay	36.4	14.0	32.1	24.8	10.0			37.8	5.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	36.4	14.0	32.1	24.8	10.0			37.8	5.3	
	36.4 D	14.0 B	32.1 C	24.8 C				37.8 D	5.3 A	
LOS Approach Dolay	26.9	В	32.1	C	Α			23.8	А	
Approach LOS										
Approach LOS	C	/2	C	0.0	20			C	0	
Queue Length 50th (ft)	113	63	4	82	20			93	0	
Queue Length 95th (ft)	#266	#243	19	m#311	m181			94	0	
Internal Link Dist (ft)	232	000	109	222				203		
Turn Bay Length (ft)		200		300	_					
Base Capacity (vph)	766	897	414	925	767			691	601	
Starvation Cap Reductn	0	0	0	0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	
Storage Cap Reductn	0	0	0	0	0			0	0	
Reduced v/c Ratio	0.56	0.35	0.02	0.64	0.46			0.68	0.59	
Intersection Summary										
Area Type:	Other									
Cycle Length: 90	Other									
Actuated Cycle Length: 90										
Offset: 0 (0%), Referenced to	nhace 2.ND	I Stort of	Croco							
Natural Cycle: 90	pnase 2:NB	L, SIATT OF	Green							
	dinated									
Control Type: Actuated-Coor	uirialed									
Maximum v/c Ratio: 0.72	1					100.0				
Intersection Signal Delay: 23					tersection		,			
Intersection Capacity Utilizati	1011 56.4%			10	CU Level of	service F	5			
Analysis Period (min) 15										
 User Entered Value 										

User Entered Value
 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.

17: Transportation Way/SR-14 #10 & Porter St/Ramp S-A & Ramp S-D Splits and Phases: **√**ø2 (R) **∱**k_{ø9}

	→	•	←	4	7	~	>	ļ	4
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	^	#	4	ሻሻ	Ž.			414	#
Volume (vph)	395	288	8	541	26	298	36	399	328
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	13	12	12	11
Total Lost time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.95	1.00
Frt	1.00	0.85	1.00	1.00	0.85			1.00	0.85
Flt Protected	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)	3282	1487	1776	3164	1278			2964	1516
Flt Permitted	1.00	1.00	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)	3282	1487	1776	3164	1278			2964	1516
						0.00	0.00		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	429	313	9	588	28	324	39	434	357
RTOR Reduction (vph)	0	20	0	0	49	0	0	0	286
Lane Group Flow (vph)	429	293	9	588	303	0	0	473	71
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm
Protected Phases	4	2	8	2	2			3	
Permitted Phases		4			3		3		3
Actuated Green, G (s)	19.0	40.9	19.0	21.9	39.8			17.9	17.9
Effective Green, q (s)	21.0	44.9	21.0	23.9	43.8			19.9	17.9
Actuated g/C Ratio	0.23	0.50	0.23	0.27	0.49			0.22	0.20
Clearance Time (s)	8.0	7.0	8.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			3.0	3.0
Lane Grp Cap (vph)	765	741	414	840	692			655	301
v/s Ratio Prot	c0.13	0.10	0.01	c0.19	0.12			000	301
v/s Ratio Perm	CU.13	0.10	0.01	CU. 19	0.12			0.16	0.05
	0.57		0.00	0.70					
v/c Ratio	0.56	0.40	0.02	0.70	0.44			0.72	0.24
Uniform Delay, d1	30.4	14.1	26.6	29.8	15.1			32.5	30.3
Progression Factor	0.98	1.02	1.00	0.62	0.89			0.95	0.16
Incremental Delay, d2	0.6	0.1	0.0	3.2	0.3			3.9	0.4
Delay (s)	30.3	14.6	26.6	21.6	13.7			34.9	5.3
Level of Service	С	В	С	С	В			С	Α
Approach Delay (s)	23.6		26.6					22.1	
Approach LOS	С		С					С	
Intersection Summary									
			21.2		CM 2000	and of C			-
HCM 2000 Control Delay			21.3	Н	CIVI 2000 I	Level of Se	ervice		С
HCM 2000 Volume to Capacit	y ratio		0.60						40.0
Actuated Cycle Length (s)			90.0		um of lost	. ,			19.0
Intersection Capacity Utilization	on		56.4%	IC	CU Level o	f Service			В
Analysis Period (min)			15						
c Critical Lane Group									

	≠	→	7	/	←	٤	•	*	<i>></i>	6	×	1		
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3	
ane Configurations	7	↑ ↑			4ी रे						414	7		
/olume (vph)	88	81	292	1	54	72	0	0	0	72	274	205		
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
ane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	250		0	0		0	0		0	0		150		
Storage Lanes	1		0	0		0	0		0	0		1		
aper Length (ft)	25			25			25			25				
atd. Flow (prot)	1770	3004	0	0	2775	0	0	0	0	0	3354	1583		
It Permitted	0.950				0.953						0.990			
atd. Flow (perm)	1770	3004	0	0	2645	0	0	0	0	0	3354	1583		
Right Turn on Red			Yes			Yes			Yes			Yes		
atd. Flow (RTOR)		*60			78							223		
ink Speed (mph)		30			30			30			30			
ink Distance (ft)		430			1019			522			475			
ravel Time (s)		9.8			23.2			11.9			10.8			
onfl. Peds. (#/hr)														
onfl. Bikes (#/hr)														
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
rowth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
leavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%		
us Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
arking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
hared Lane Traffic (%)														
ane Group Flow (vph)	96	405	0	0	138	0	0	0	0	0	376	223		
urn Type	Prot	NA		Perm	NA					Split	NA	pm+ov		
rotected Phases	1	6			2					4	4	1	3	
ermitted Phases				2								4		
etector Phase	1	6		2	2					4	4	1		
witch Phase														
linimum Initial (s)	6.0	10.0		10.0	10.0					6.0	6.0	6.0	1.0	
linimum Split (s)	13.0	17.0		17.0	17.0					13.0	13.0	13.0	27.0	
otal Split (s)	18.0	40.0		22.0	22.0					23.0	23.0	18.0	27.0	
otal Split (%)	20.0%	44.4%		24.4%	24.4%					25.6%	25.6%	20.0%	30%	
'ellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	
II-Red Time (s)	4.0	4.0		4.0	4.0					3.0	3.0	4.0	0.0	
ost Time Adjust (s)	-2.0	-2.0			-2.0						-2.0	-2.0		
otal Lost Time (s)	5.0	5.0			5.0						4.0	5.0		
ead/Lag	Lead			Lag	Lag					Lag	Lag	Lead	Lead	
ead-Lag Optimize?														
ecall Mode	None	C-Max		C-Max	C-Max					None	None	None	None	
ct Effct Green (s)	10.9	54.1			38.2						16.1	31.0		
ctuated g/C Ratio	0.12	0.60			0.42						0.18	0.34		
c Ratio	0.45	0.22			0.12						0.63	0.32		
ontrol Delay	46.5	19.0			12.7						38.9	3.9		
ueue Delay	0.0	0.0			0.0						0.0	0.0		
otal Delay	46.5	19.0			12.7						38.9	3.9		
OS -	D	В			В						D	Α		
pproach Delay		24.2			12.7						25.9			
pproach LOS		С			В						С			
ueue Length 50th (ft)	56	71			7						104	0		
ueue Length 95th (ft)	m107	126			40						146	42		
ternal Link Dist (ft)		350			939			442			395			
urn Bay Length (ft)	250											150		
ase Capacity (vph)	255	1830			1167						708	722		
arvation Cap Reductn	0	0			0						0	0		
pillback Cap Reductn	0	0			0						0	0		
torage Cap Reductn	0	0			0						0	0		
educed v/c Ratio	0.38	0.22			0.12						0.53	0.31		
ntersection Summary														
rea Type:	Other													
Cycle Length: 90	Outel													
Actuated Cycle Length: 90														
offset: 0 (0%), Referenced	to phace 2.1MF	QTI and 4.	ERT Stor	t of Croon	Mactoria	torcoction								
latural Cycle: 70	to priase 2:4VE	o i L allu 0:	LDI, SIĞİ	i oi oileeli	i, iviastei II	nei section								
atural Cycle: 70 ontrol Type: Actuated-Cod	ordinated													
	Ji UlliaieU													

Maximum v/c Ratio: 0.63
Intersection Signal Delay: 23.7
Intersection Capacity Utilization 41.3%
Analysis Period (min) 15
* User Entered Value

Intersection LOS: C ICU Level of Service A

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

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10



	#	-	7	F	•	€	•	×	/	Ĺ	×	~	
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations	*	↑ ⊅			414						414	7	
Volume (vph)	88	81	292	1	54	72	0	0	0	72	274	205	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0	
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00	
Frt	1.00	0.88			0.92						1.00	0.85	
Flt Protected	0.95	1.00			1.00						0.99	1.00	
Satd. Flow (prot)	1770	3002			2775						3353	1583	
Flt Permitted	0.95	1.00			0.95						0.99	1.00	
Satd. Flow (perm)	1770	3002			2645						3353	1583	
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)	96	88	317	1	59	78	0	0	0	78	298	223	
RTOR Reduction (vph)	0	25	0	0	46	0	0	0	0	0	0	156	
Lane Group Flow (vph)	96	380	0	0	92	0	0	0	0	0	376	67	
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%	
Turn Type	Prot	NA	2,0	Perm	NA	2070	0,0	0,0	0,0	Split	NA	pm+ov	
Protected Phases	1	6		I CIIII	2					3piit 4	4	1	
Permitted Phases		U		2								4	
Actuated Green, G (s)	8.9	50.3		2	34.4						14.1	23.0	
Effective Green, g (s)	10.9	52.3			36.4						16.1	27.0	
Actuated g/C Ratio	0.12	0.58			0.40						0.18	0.30	
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0	
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0	
Lane Grp Cap (vph)	214	1744			1069						599	474	
v/s Ratio Prot	c0.05	c0.13			1007						c0.11	0.02	
v/s Ratio Perm	C0.03	CO. 13			0.03						CO. 1 1	0.02	
v/c Ratio	0.45	0.22			0.09						0.63	0.03	
Uniform Delay, d1	36.8	9.0			16.5						34.2	23.0	
Progression Factor	1.10	1.81			1.00						1.00	1.00	
Incremental Delay, d2	0.5	0.3			0.2						1.5	0.0	
Delay (s)	41.1	16.7			16.7						35.7	23.1	
Level of Service	D	В			В						D	C	
Approach Delay (s)		21.3			16.7			0.0			31.0		
Approach LOS		Z 1.5			В.			Α			C C		
								,,					
Intersection Summary													
HCM 2000 Control Delay			25.5	H	CM 2000 L	evel of Se	rvice		С				
HCM 2000 Volume to Capacity	ratio		0.32										
Actuated Cycle Length (s)			90.0		ım of lost				17.0				
Intersection Capacity Utilization	า		41.3%	IC	U Level of	Service			Α				
Analysis Period (min)			15										

	٠	→	•	•	+	•	1	†	~	/	 	4				
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9	
Lane Configurations	LDL	LDI	77	Y T	↑	WDIX	NDE 1	INDI	NDIX	JDL	<u> </u>	JUK	IJZ	93	907	
Volume (vph)	0	0	210	41	68	0	180	0	0	0	92	0				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12				
Grade (%)	_	0%	_		0%	_	_	0%		_	0%	_				
Storage Length (ft)	0		0	100		0	0		0	0		0				
Storage Lanes Taper Length (ft)	0 25		2	1 25		0	1 25		0	0 25		0				
Satd. Flow (prot)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0				
Flt Permitted			2170	0.950	1007		0.950	· ·	Ü		1173					
Satd. Flow (perm)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0				
Right Turn on Red			Yes			Yes			Yes			Yes				
Satd. Flow (RTOR)			1141													
Link Speed (mph)		30			30			30			30					
Link Distance (ft)		344 7.8			1001 22.8			716 16.3			257 5.8					
Travel Time (s) Confl. Peds. (#/hr)		7.0			22.0			10.3			0.0					
Confl. Bikes (#/hr)																
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0				
Parking (#/hr)																
Mid-Block Traffic (%)		0%			0%			0%			0%					
Shared Lane Traffic (%)	0	0	228	45	74	0	196	0	0	0	100	0				
Lane Group Flow (vph) Turn Type	U	U	pt+ov	pm+pt	NA	U	Prot	U	U	U	NA	U				
Protected Phases			3 9	1	6		3 9				4		2	3	9	
Permitted Phases			2	6												
Detector Phase			2	1	6		3				4					
Switch Phase																
Minimum Initial (s)				6.0	6.0						10.0		6.0	6.0	4.0	
Minimum Split (s)				12.0	12.0						15.5		12.0	11.5	20.0	
Total Split (s) Total Split (%)				12.0 13.3%	29.0 32.2%						22.0 24.4%		17.0 19%	19.0 21%	20.0 22%	
Yellow Time (s)				3.0	3.0						4.0		3.0	3.0	2.0	
All-Red Time (s)				3.0	3.0						1.5		3.0	2.5	1.0	
Lost Time Adjust (s)				-1.0	-1.0						-1.0					
Total Lost Time (s)				5.0	5.0						4.5					
Lead/Lag				Lead							Lag		Lag	Lead		
Lead-Lag Optimize?																
Recall Mode			24.0	None	None		15.0				None		None	None	None	
Act Effct Green (s) Actuated g/C Ratio			26.8 0.62	13.4 0.31	13.4 0.31		15.2 0.35				16.2 0.37					
v/c Ratio			0.02	0.08	0.31		0.35				0.37					
Control Delay			0.12	17.8	18.7		17.5				21.2					
Queue Delay			0.0	0.0	0.0		0.0				0.0					
Total Delay			0.1	17.8	18.7		17.5				21.2					
LOS			Α	В	В		В				С					
Approach Delay					18.3						21.2					
Approach LOS				40	В		40				C					
Queue Length 50th (ft)			0	10 40	17 60		42 115				21 84					
Queue Length 95th (ft) Internal Link Dist (ft)		264	U	40	921		110	636			177					
Turn Bay Length (ft)		204		100	721			330			177					
Base Capacity (vph)			2072	540	868		822				767					
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			0.11	0.08	0.09		0.24				0.13					
Intersection Summary																
	Other															
Cycle Length: 90																
Actuated Cycle Length: 43.4																
Natural Cycle: 75	ardinated															
Control Type: Actuated-Uncoo Maximum v/c Ratio: 0.35	Julialed															
Intersection Signal Delay: 12.1	1			In	tersection	LOS: B										
Intersection Capacity Utilization						f Service A	1									
Analysis Period (min) 15																
Splits and Phases: 25: Hote	el Drive & SR	2-2/Ramp	D-S													
ÿ1	⊸ ø2				♦ ø9				:	∆ ø3				↓ ,	ø4	
12 s	17 s				0 s				19	s				22 s		
₩ ø6																
♥ ø6 29 s																
Z7 3																

	,	-	•	•	←	•	4	†	~	-	ļ	4		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations			11	*			*				↑			
Volume (vph)	0	0	210	41	68	0	180	0	0	0	92	0		
	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.5	5.0	5.0		4.5				4.5			
Lane Util. Factor			0.88	1.00	1.00		1.00				1.00			
Frt			0.85	1.00	1.00		1.00				1.00			
Flt Protected			1.00	0.95	1.00		0.95				1.00			
Satd. Flow (prot)			2493	1752	1357		1583				1473			
Flt Permitted			1.00	0.95	1.00		0.95				1.00			
Satd. Flow (perm)			2493	1752	1357		1583				1473			
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	228	45	74	0.72	196	0	0	0.72	100	0.72		
RTOR Reduction (vph)	0	0	143	0	0	0	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	85	45	74	0	196	0	0	0	100	0		
	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%		
Turn Type			pt+ov	pm+pt	NA		Prot				NA			
Protected Phases			3 9	1	6		3 9				4			
Permitted Phases			2	6										
Actuated Green, G (s)			17.5	12.5	12.5		12.6				5.0			
Effective Green, g (s)			17.5	13.5	13.5		11.6				6.0			
Actuated g/C Ratio			0.37	0.29	0.29		0.25				0.13			
Clearance Time (s)				6.0	6.0						5.5			
Vehicle Extension (s)				2.0	2.0						2.0			
Lane Grp Cap (vph)			926	502	388		389				187			
v/s Ratio Prot			0.02	0.00	c0.05		c0.12				c0.07			
v/s Ratio Perm			0.01	0.02	00.00		00.12				60.07			
v/c Ratio			0.09	0.09	0.19		0.50				0.53			
Uniform Delay, d1			9.6	12.3	12.7		15.3				19.2			
Progression Factor			1.00	1.00	1.00		1.00				1.00			
Incremental Delay, d2			0.0	0.0	0.1		0.4				1.5			
Delay (s)			9.6	12.3	12.8		15.6				20.7			
Level of Service			Α	В	В		В				С			
Approach Delay (s)		9.6			12.6			15.6			20.7			
Approach LOS		Α			В			В			С			
Intersection Summary														
HCM 2000 Control Delay			13.7	Н	CM 2000 L	evel of Se	ervice		В					
HCM 2000 Volume to Capacity ratio	0		0.46	- 110	000 L									
Actuated Cycle Length (s)			47.1	Sı	um of lost	ime (s)			22.0					
Intersection Capacity Utilization			32.3%		U Level of				A					

	•	-	•	•	←	•	1	†	*	\	+	4		
ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	
ane Configurations		4	7	7		7		∱ 1≽			414			
olume (vph)	103	22	508	80	0	58	0	20	166	113	230	0		
leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
ane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
torage Length (ft)	0		0	0		0	0		0	0		0		
torage Lanes	0		1	1		1	0		0	0		0		
aper Length (ft)	25			25			25			25				
atd. Flow (prot)	0	1555	1468	1480	0	1369	0	2588	0	0	3070	0		
t Permitted		0.960		0.950							0.784			
atd. Flow (perm)	0	1555	1468	1480	0	1369	0	2588	0	0	2446	0		
ight Turn on Red			Yes			Yes			Yes			Yes		
atd. Flow (RTOR)			552			121		180						
nk Speed (mph)		30			30			30			30			
nk Distance (ft)		662			390			344			716			
avel Time (s)		15.0			8.9			7.8			16.3			
onfl. Peds. (#/hr)		10.0			0.7			7.0			10.0			
onfl. Bikes (#/hr)														
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
eak Hour Factor rowth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
eavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
us Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
arking (#/hr)														
id-Block Traffic (%)		0%			0%			0%			0%			
nared Lane Traffic (%)														
ane Group Flow (vph)	0	136	552	87	0	63	0	202	0	0	373	0		
ırn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA			
otected Phases	4	4	4	3		3		1			1		2	
ermitted Phases										1				
etector Phase	4	4	4	3		3		1		1	1			
witch Phase														
linimum Initial (s)	7.0	7.0	7.0	5.0		5.0		7.0		7.0	7.0		1.0	
inimum Split (s)	12.0	12.0	12.0	10.0		10.0		13.0		13.0	13.0		22.0	
otal Split (s)	17.0	17.0	17.0	17.0		17.0		33.0		33.0	33.0		23.0	
otal Split (%)	18.9%	18.9%	18.9%	18.9%		18.9%		36.7%		36.7%	36.7%		26%	
ellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0		2.0	
I-Red Time (s)	1.0	1.0	1.0	1.0		1.0		2.0		2.0	2.0		0.0	
ost Time Adjust (s)	1.0	-1.0	-1.0	-1.0		-1.0		-2.0		2.0	-2.0		0.0	
otal Lost Time (s)		4.0	4.0	4.0		4.0		4.0			4.0			
ead/Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	Lead		Lag	
ead-Lag Optimize?	Yes	Yes	Yes	Yes		Yes		Yes		Yes	Yes		Yes	
ecall Mode						None		Min		Min	Min			
	None	None	None	None						IVIIII			None	
ct Effct Green (s)		11.4	11.4	9.4		9.4		16.7			16.7			
ctuated g/C Ratio		0.23	0.23	0.19		0.19		0.33			0.33			
Ratio		0.39	0.73	0.31		0.18		0.21			0.46			
ontrol Delay		26.8	9.9	27.3		1.8		5.0			18.0			
ueue Delay		0.0	0.0	0.0		0.0		0.0			0.0			
otal Delay		26.8	9.9	27.3		1.8		5.0			18.0			
OS		С	Α	С		Α		Α			В			
proach Delay		13.2						5.0			18.0			
proach LOS		В						Α			В			
ieue Length 50th (ft)		30	0	20		0		2			38			
eue Length 95th (ft)		#132	#152	90		5		28			130			
ernal Link Dist (ft)		582			310			264			636			
rn Bay Length (ft)														
ise Capacity (vph)		471	829	449		499		1744			1589			
arvation Cap Reductn		0	0	0		0		0			0			
illback Cap Reductn		0	0	0		0		0			0			
orage Cap Reductin		0	0	0		0		0			0			
educed v/c Ratio											0.23			
Buuceu WC Rallo		0.29	0.67	0.19		0.13		0.12			0.23			
tersection Summary														
ea Type:	Other													
cle Lenath: 90	5													

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 50.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 13.6
Intersection Capacity Utilization 55.5%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Intersection LOS: B
ICU Level of Service B

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4	7	*		7		† Ъ			414			
Volume (vph)	103	22	508	80	0	58	0	20	166	113	230	0		
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		4.0			4.0			
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95			
Frt		1.00	0.85	1.00		0.85		0.87			1.00			
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.98			
Satd. Flow (prot)		1556	1468	1480		1369		2589			3070			
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.78			
Satd. Flow (perm)		1556	1468	1480		1369		2589			2446			
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)	112	24	552	87	0	63	0	22	180	123	250	0		
RTOR Reduction (vph)	0	0	431	0	0	54	0	122	0	0	0	0		
Lane Group Flow (vph)	0	136	121	87	0	9	0	80	0	0	373	0		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA			
Protected Phases	4	4	4	3		3		1			1			
Permitted Phases	•	•								1				
Actuated Green, G (s)		10.2	10.2	6.3		6.3		14.4			14.4			
Effective Green, q (s)		11.2	11.2	7.3		7.3		16.4			16.4			
Actuated g/C Ratio		0.22	0.22	0.14		0.14		0.32			0.32			
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0			
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0			
Lane Grp Cap (vph)		340	321	211		195		829			783			
v/s Ratio Prot		c0.09	0.08	c0.06		0.01		0.03						
v/s Ratio Perm											c0.15			
v/c Ratio		0.40	0.38	0.41		0.05		0.10			0.48			
Uniform Delay, d1		17.1	17.0	20.0		18.9		12.2			14.0			
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00			
Incremental Delay, d2		0.3	0.3	0.5		0.0		0.1			0.5			
Delay (s)		17.4	17.3	20.5		19.0		12.3			14.4			
Level of Service		В	В	С		В		В			В			
Approach Delay (s)		17.3			19.8			12.3			14.4			
Approach LOS		В			В			В			В			
Intersection Summary														
HCM 2000 Control Delay			16.1	H	CM 2000 L	evel of Se	rvice		В					
HCM 2000 Volume to Capacity rat	tio		0.41											
Actuated Cycle Length (s)			51.2	Sı	um of lost	time (s)			14.0					
Intersection Capacity Utilization			55.5%	IC	U Level of	Service			В					
Analysis Period (min)			15											

	•	•	•	†	ļ	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations	¥			†	†		
Volume (vph)	162	29	0	255	255	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12		12	12	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			0	
Storage Lanes	1	0	0			0	
Taper Length (ft)	25		25				
Satd. Flow (prot)	1723	0	0	1652	1610	0	
Flt Permitted	0.959			475	4		
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red Satd. Flow (RTOR)	12	Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	499			447	331		
Travel Time (s)	11.3			10.2	7.5		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)	200	0	0	דדנ	777	0	
Lane Group Flow (vph)	208 Prot	0	0	277 ΝΔ	277 ΝΔ	0	
Turn Type Protected Phases	Prot 3			NA 1	NA 1		2
Protected Phases Permitted Phases	3						2
Permitted Phases Detector Phase	3			1	1		
Switch Phase	3						
Minimum Initial (s)	8.0			8.0	8.0		4.0
Minimum Split (s)	13.0			13.0	13.0		19.0
Total Split (s)	30.0			30.0	30.0		20.0
Total Split (%)	37.5%			37.5%	37.5%		25%
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		1.0
Lost Time Adjust (s)	-1.0			-1.0	-1.0		لأنها
Total Lost Time (s)	4.0			4.0	4.0		
Lead/Lag				Lead	Lead		Lag
Lead-Lag Optimize?				Yes	Yes		Yes
Recall Mode	None			C-Max	C-Max		None
Act Effet Green (s)	14.6			53.6	53.6		
Actuated g/C Ratio	0.18			0.67	0.67		
v/c Ratio	0.64			0.25	0.26		
Control Delay	37.0			8.9	6.3		
Queue Delay	0.0			0.0	0.3		
Total Delay	37.0 D			8.9 A	6.6 A		
LOS Approach Delay	D 37.0			A 8.9	A 6.6		
Approach Delay Approach LOS	37.0 D			8.9 A	6.6 A		
Approach LOS Queue Length 50th (ft)	91			A 38	A 43		
Queue Length 95th (ft)	146			160	113		
Internal Link Dist (ft)	419			367	251		
Turn Bay Length (ft)	419			307	201		
Base Capacity (vph)	568			1105	1077		
Starvation Cap Reductn	0			0	352		
Spillback Cap Reductin	0			2	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.37			0.25	0.38		
	5.57				1.00		
Intersection Summary	Othor						
Area Type: Cycle Length: 80	Other						
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced	to phace 1.4	NBCB C+-	rt of Green	1			
Offset: 79 (99%), Referenced Natural Cycle: 55	u io priase 1:f	.NDSB, St&	art or Qteet	11			
Natural Cycle: 55 Control Type: Actuated-Coord	dinated						
Maximum v/c Ratio: 0.64	. am lated						
Intersection Signal Delay: 15.	1.7			In	ntersection	LOS: B	
Intersection Capacity Utilization						of Service A	
Analysis Period (min) 15					. 51 0		
Splits and Phases: 33: SR-	2-2/Frankfort S	Street & Pr	oute 1A NR	3 Off-Ram	۱p		
	ТОГИПЪТ 1	Judet & K	Luio IA NE	- אייר דעמון.	<u>r</u>	2.5	
						ÅÅø2	
30 s						20 s	

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	W			†	†	
Volume (vph)	162	29	0	255	255	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	1.00	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1724			1652	1610	
Flt Permitted	0.96			1.00	1.00	
Satd. Flow (perm)	1724			1652	1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	176	32	0	277	277	0
RTOR Reduction (vph)	10	0	0	0	0	0
Lane Group Flow (vph)	198	0	0	277	277	0
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%
Turn Type	Prot			NA	NA	
Protected Phases	3			1	1	
Permitted Phases						
Actuated Green, G (s)	13.6			50.2	50.2	
Effective Green, g (s)	14.6			51.2	51.2	
Actuated g/C Ratio	0.18			0.64	0.64	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	314			1057	1030	
v/s Ratio Prot	c0.11			0.17	c0.17	
v/s Ratio Perm						
v/c Ratio	0.63			0.26	0.27	
Uniform Delay, d1	30.2			6.2	6.3	
Progression Factor	1.00			1.00	0.69	
Incremental Delay, d2	3.0			0.6	0.6	
Delay (s)	33.2			6.8	4.9	
Level of Service	С			Α	Α	
Approach Delay (s)	33.2			6.8	4.9	
Approach LOS	С			Α	Α	
Intersection Summary						
HCM 2000 Control Delay			13.3	Н	CM 2000 L	evel of Service
HCM 2000 Volume to Capacity	v ratio		0.33	110	5141 2000 L	CVCI OI JCI VICE
Actuated Cycle Length (s)	,		80.0	Sı	um of lost t	ime (s)
Intersection Capacity Utilizatio	n		30.8%		U Level of	
Analysis Period (min)			15			

	/	€_	×	/	Ĺ	K
Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	*	7	1			4
Volume (vph)	116	31	223	55	20	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	200		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1367	1188	1602	0	0	1662
Flt Permitted	0.950					0.996
Satd. Flow (perm)	1367	1188	1602	0	0	1662
Link Speed (mph)	30		30			30
Link Distance (ft)	325		926			447
Travel Time (s)	7.4		21.0			10.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	32%	36%	18%	5%	38%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	126	34	302	0	0	309
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	on 43.5%			IC	U Level o	f Service A
Analysis Period (min) 15						

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Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	*	7	7			4
Volume (veh/h)	116	31	223	55	20	264
Sign Control	Stop	- 01	Free	- 00		Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	126	34	242	60	22	287
Pedestrians	120	01	- 1-	00		20,
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type		· ·	None			None
Median storage veh)			TTOTIC			Hone
Upstream signal (ft)						447
pX, platoon unblocked	0.95					77/
vC, conflicting volume	603	272			302	
vC1, stage 1 conf vol	003	212			302	
vC2, stage 2 conf vol						
vCu, unblocked vol	556	272			302	
tC, single (s)	6.7	6.6			4.5	
tC, 2 stage (s)	0.7	0.0			4.5	
tF (s)	3.8	3.6			2.5	
p0 queue free %	70	95			98	
cM capacity (veh/h)	414	692			1080	
					1000	
Direction, Lane #	WB 1	NE 1	SW 1			
Volume Total	160	302	309			
Volume Left	126	0	22			
Volume Right	34	60	0			
cSH	525	1700	1080			
Volume to Capacity	0.30	0.18	0.02			
Queue Length 95th (ft)	32	0	2			
Control Delay (s)	16.0	0.0	0.8			
Lane LOS	С		Α			
Approach Delay (s)	16.0	0.0	0.8			
Approach LOS	С					
Intersection Summary						
Average Delay			3.6			
Intersection Capacity Utilization			43.5%	IC	U Level of	Service
Analysis Period (min)			15	10	O LCVCI UI .	OCI VICE
Analysis r criou (min)			13			

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ሻኛ	LDIN	.100	41	↑ ↑	OSIC
Volume (vph)	56	7	1	61	37	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	3403	0	0	3536	3274	0
Flt Permitted	0.958	_	_	0.949	2071	_
Satd. Flow (perm)	3403	0	0	3359	3274	0
Right Turn on Red		Yes			40	Yes
Satd. Flow (RTOR)	8			20	40	
Link Speed (mph)	30 361			30 895	30 973	
Link Distance (ft) Travel Time (s)	361 8.2			20.3	9/3 22.1	
Confl. Peds. (#/hr)	0.2			20.3	ZZ. I	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	67	80	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6	,	- 0	
Detector Phase	4		6	6	2	
Switch Phase	15.0		4.0	4.0	4.0	
Minimum Initial (s)	15.0 20.0		6.0	6.0	6.0 20.0	
Minimum Split (s) Total Split (s)	20.0 45.0		11.0 22.0	11.0 22.0	20.0	
Total Split (%)	45.0 67.2%		32.8%	32.8%	32.8%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		None	None	None	
Act Effct Green (s)	17.4			9.1	9.1	
Actuated g/C Ratio	0.84			0.44	0.44	
v/c Ratio	0.02			0.05	0.06	
Control Delay	3.3			4.6	3.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.3			4.6	3.2	
LOS Approach Dolay	A 3.3			A 4.6	A 3.2	
Approach Delay Approach LOS	3.3 A			4.6 A	3.2 A	
Queue Length 50th (ft)	0 0			A 0	A 1	
Queue Length 95th (ft)	11			12	11	
Internal Link Dist (ft)	281			815	893	
Turn Bay Length (ft)	201			010	373	
Base Capacity (vph)	3403			2989	2918	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.02			0.02	0.03	
Intersection Summary						
	Other					
Area Type: Cycle Length: 67	Outer					
Cycle Length: 67 Actuated Cycle Length: 20.8						
Natural Cycle: 40						
Control Type: Actuated-Unco	nordinated					
Maximum v/c Ratio: 0.06	oorumatea					
Intersection Signal Delay: 3.	7			In	tersection	1 OS: A
Intersection Capacity Utilizat					CU Level of	
Analysis Period (min) 15	11011 44.4 /0			iC	O FEAGUO	JUI VILLE F
. marysis i criod (min) 13						
Splits and Phases: 86: Ha	rborside Drive	e & Hvatt Γ	Drive			
L. I		, ,	-		→	
▼ ø2					≯ _{ø4}	
22 s					45 s	
↑ ø6						
72 s						
					_	

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	***			44	† 1>	
Volume (vph)	56	7	1	61	37	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.98			1.00	0.93	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	3401			3537	3274	
Flt Permitted	0.96			0.95	1.00	
Satd. Flow (perm)	3401			3359	3274	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	8	1	66	40	40
RTOR Reduction (vph)	7	0	0	0	28	0
Lane Group Flow (vph)	62	0	0	67	52	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Actuated Green, G (s)	1.6			3.3	3.3	
Effective Green, g (s)	2.6			4.3	4.3	
Actuated g/C Ratio	0.17			0.29	0.29	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			2.0	2.0	
Lane Grp Cap (vph)	593			969	944	
v/s Ratio Prot	c0.02				0.02	
v/s Ratio Perm				c0.02		
v/c Ratio	0.11			0.07	0.05	
Uniform Delay, d1	5.2			3.8	3.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.0	0.0	
Delay (s)	5.3			3.9	3.8	
Level of Service	Α			Α	Α	
Approach Delay (s)	5.3			3.9	3.8	
Approach LOS	Α			Α	Α	
Intersection Summary						
HCM 2000 Control Delay			4.3	Н	CM 2000 I	evel of Service
HCM 2000 Volume to Capaci	tv ratio		0.08			
Actuated Cycle Length (s)	,		14.9	Sı	ım of lost t	ime (s)
Intersection Capacity Utilization	on		24.2%		U Level of	
Analysis Period (min)			15			
c Critical Lane Group						

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		4			44
Volume (vph)	124	7	123	125	7	127
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1765	0	1736	0	0	3529
Flt Permitted	0.955					0.997
Satd. Flow (perm)	1765	0	1736	0	0	3529
Link Speed (mph)	30		30			30
Link Distance (ft)	78		344			228
Travel Time (s)	1.8		7.8			5.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	0	270	0	0	146
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizati	ion 28.1%			IC	U Level o	f Service A
Analysis Period (min) 15						

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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		1>			41
Volume (veh/h)	124	7	123	125	7	127
Sign Control	Stop	,	Free	123		Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	135	0.92	134	136	0.92	138
Pedestrians	133	ď	134	130	0	130
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked						
vC, conflicting volume	286	202			270	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	286	202			270	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	99			99	
cM capacity (veh/h)	677	806			1291	
					1271	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	142	270	54	92		
Volume Left	135	0	8	0		
Volume Right	8	136	0	0		
cSH	683	1700	1291	1700		
Volume to Capacity	0.21	0.16	0.01	0.05		
Queue Length 95th (ft)	20	0.10	0.01	0.03		
Control Delay (s)	11.7	0.0	1.1	0.0		
Lane LOS	В	0.0	Α	0.0		
	11.7	0.0	0.4			
Approach Delay (s)		0.0	0.4			
Approach LOS	В					
Intersection Summary						
			3.1			
Average Delay						
Average Delay			28.1%	ICI	U Level of Se	ervice
				ICI	U Level of Se	ervice

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Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	أ	^	† }		200	† }		*
Volume (vph) Ideal Flow (vphpl)	102 1900	762 1900	322 1900	142 1900	800 1900	1022 1900	37 1900	39 1900
Lane Width (ft)	1900	1900	1900	1900	1900	1900	1900	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes Taper Length (ft)	1 25			0	1 25		0	
Satd. Flow (prot)	1662	3505	3181	0	1728	3556	0	933
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1662	3505	3181	0 Voc	1728	3556	0 Voc	933
Right Turn on Red Satd. Flow (RTOR)			57	Yes		6	Yes	
Link Speed (mph)		30	30			30		
Link Distance (ft)		160	642			170		
Travel Time (s)		3.6	14.6			3.9		
Confl. Peds. (#/hr) Confl. Bikes (#/hr)								
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0
Parking (#/hr) Mid-Block Traffic (%)		0%	0%			0%		
Shared Lane Traffic (%)		070	070			070		
Lane Group Flow (vph)	111	828	504	0	870	1151	0	42
Turn Type	Prot	NA	NA		Prot	NA		Prot
Protected Phases	1	6	2		3	8		4
Permitted Phases Detector Phase	1	6	2		3	8		4
Switch Phase		U			J	U		4
Minimum Initial (s)	6.0	10.0	10.0		10.0	6.0		6.0
Minimum Split (s)	12.0	16.0	27.0		15.0	24.0		12.0
Total Split (s)	12.0	39.0	27.0		59.0 53.6%	71.0		12.0 10.9%
Total Split (%) Yellow Time (s)	10.9% 3.0	35.5% 3.0	24.5%		53.6% 3.0	64.5% 3.0		10.9%
All-Red Time (s)	3.0	3.0	3.0		2.0	3.0		3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0		4.0
Lead/Lag	Lead		Lag		Lag			Lead
Lead-Lag Optimize? Recall Mode	None	C-Max	C-Max		None	None		None
Act Effct Green (s)	8.7	36.9	24.2		56.5	65.1		8.0
Actuated g/C Ratio	0.08	0.34	0.22		0.51	0.59		0.07
v/c Ratio	0.85	0.70	0.68		0.98	0.55		0.63
Control Delay	79.0	42.0	40.4		53.3	14.4		88.2
Queue Delay	0.0 70.0	0.0 42.0	0.0 40.4		0.0 53.3	0.0 14.4		0.0 88.2
Total Delay LOS	79.0 E	42.0 D	40.4 D		53.3 D	14.4 B		88.2 F
Approach Delay	E	46.4	40.4		D	31.1		Г
Approach LOS		D	D			С		
Queue Length 50th (ft)	83	317	155		585	228		29
Queue Length 95th (ft)	m#115	m291	216		#874	283		#87
Internal Link Dist (ft) Turn Bay Length (ft)	200	80	562			90		
Base Capacity (vph)	130	1175	744		887	2168		67
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	0.85	0.70	0.68		0.98	0.53		0.63
Intersection Summary								
	Other							
Cycle Length: 110								
Actuated Cycle Length: 110 Offset: 0 (0%), Referenced to	phase 2/ME	T and 4.F	DT Ctort	of Croop				
Natural Cycle: 100	priase 2:WE	o i aliu o e	DI, Slail (oi Green				
Control Type: Actuated-Coord	dinated							
Maximum v/c Ratio: 0.98								
Intersection Signal Delay: 37.					itersection			
Intersection Capacity Utilization	on 80.1%			IC	CU Level o	of Service D)	
Analysis Period (min) 15 # 95th percentile volume ex	roade canas	ity augus	may ho la	nger				
Queue shown is maximum			may be it	niger.				
m Volume for 95th percentil	e queue is m	netered by	upstream	signal.				
Splits and Phases: 5: Inffri	os Stroot/Da	mn S T 0	Transports	ation May				
Splits and Phases: 5: Jeffri	es sireet/Ra •	111µ S-1 &	rransporta	auun way				
	ø2 (R)					ø4		↑ ø3
12 s 27 s					12			59 s
→ø6 (R)						↑ ø8		
20 0					71	S		

	۶	-	←	•	4	†	/	•
Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	*	^	† 1>		*	† 1>		*
Volume (vph)	102	762	322	142	800	1022	37	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	1900	1900	1900	1900	1900	1900	1900	13
Total Lost time (s)	4.0	4.0	4.0	12	3.0	4.0	12	4.0
	1.00	0.95	0.95		1.00	0.95		1.00
Lane Util. Factor								
Frt	1.00	1.00	0.95		1.00	0.99		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1662	3505	3181		1728	3556		933
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1662	3505	3181		1728	3556		933
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	111	828	350	154	870	1111	40	42
RTOR Reduction (vph)	0	0	45	0	0	2	0	0
Lane Group Flow (vph)	111	828	459	0	870	1149	0	42
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
			NA	1070		NA	1 70	
Turn Type	Prot	NA			Prot			Prot
Protected Phases	1	6	2		3	8		4
Permitted Phases								
Actuated Green, G (s)	6.7	33.7	21.0		54.5	64.3		4.8
Effective Green, g (s)	8.7	35.7	23.0		56.5	66.3		6.8
Actuated g/C Ratio	0.08	0.32	0.21		0.51	0.60		0.06
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0
Lane Grp Cap (vph)	131	1137	665		887	2143		57
v/s Ratio Prot	0.07	c0.24	0.14		c0.50	0.32		c0.05
v/s Ratio Perm	0.07	00.21	0		50.00	0.02		50.00
v/c Ratio	0.85	0.73	0.69		0.98	0.54		0.74
Uniform Delay, d1	50.0	32.9	40.2		26.2	12.8		50.7
		1.22						
Progression Factor	0.91		1.00		1.00	1.00		1.00
Incremental Delay, d2	23.3	2.4	5.8		25.4	0.3		38.8
Delay (s)	68.8	42.5	46.0		51.7	13.1		89.5
Level of Service	E	D	D		D	В		F
Approach Delay (s)		45.6	46.0			29.7		
Approach LOS		D	D			С		
Intersection Summary								
HCM 2000 Control Delay			37.0	HO	CM 2000 L	evel of Se	rvice	
HCM 2000 Volume to Capacity	v ratio		0.91					
Actuated Cycle Length (s)	,		110.0	Sı	ım of lost t	time (s)		
Intersection Capacity Utilization	n		80.1%		U Level of			
Analysis Period (min)			15	10	O LEVEL OF	JOI VICE		
c Critical Lane Group			IJ					
c Chilcal Lane Group								

	•	-	•	•	←	•	4	†	~	-	↓	1		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9	
Lane Configurations		4			4		ሻ	1			4			
Volume (vph)	0	0	129	59	0	51	253	451	34	20	65	29		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		0	0		0	1		0	0		0		
Taper Length (ft)	25			25			25			25				
Satd. Flow (prot)	0	822	0	0	1447	0	902	1826	0	0	1386	0		
Flt Permitted					0.747		0.677				0.890			
Satd. Flow (perm)	0	822	0	0	1109	0	643	1826	0	0	1244	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)		793			109			5			21			
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		70			643			331			442			
Travel Time (s)		1.6			14.6			7.5			10.0			
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	140	0	0	119	0	275	527	0	0	125	0		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6		9	
Permitted Phases	4			8			2			6				
Detector Phase	4	4		8	8		2	2		6	6			
Switch Phase														
Minimum Initial (s)	6.0	6.0		15.0	15.0		6.0	6.0		6.0	6.0		4.0	
Minimum Split (s)	12.0	12.0		21.0	21.0		13.0	13.0		13.0	13.0		26.0	
Total Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0		26.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		32.5%	32.5%		32.5%	32.5%		33%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0		1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0			
Total Lost Time (s)		5.0			5.0		6.0	6.0			6.0			
Lead/Lag														
Lead-Lag Optimize?														
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max		None	
Act Effct Green (s)		16.0			16.0		47.8	47.8			47.8			
Actuated g/C Ratio		0.20			0.20		0.60	0.60			0.60			
v/c Ratio		0.18			0.39		0.72	0.48			0.17			
Control Delay		0.5			11.2		26.1	12.8			9.8			
Queue Delay		0.0			0.0		0.0	0.6			0.0			
Total Delay		0.5			11.2		26.1	13.3			9.8			
LOS Approach Dolay		A 0.5			B 11.2		С	B 17.7			A 9.8			
Approach LOS					11.2 B			17.7 B			9.8 A			
Approach LOS		A 0					72				17			
Queue Length 50th (ft)					4 47		73 m#212	115 #400			79			
Queue Length 95th (ft)		0			563		m#312	#400 251			362			
Internal Link Dist (ft) Turn Bay Length (ft)					203			201			302			
Base Capacity (vph)		801			396		383	1093			751			
Starvation Cap Reductn		001			390		303	242			0			
Spillback Cap Reductn		0			0		0	242			0			
Storage Cap Reductn		0			0		0	0			0			
Reduced v/c Ratio		0.17			0.30		0.72	0.62			0.17			
		0.17			0.00		0.12	0.02			0.17			
Intersection Summary														

Other Area Type:

Cycle Length: 80 Actuated Cycle Length: 80 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Offset: 0 (U%), Referenced to phase 2:NBTL and 0.SBTL, Start of G
Natural Cycle: 90
Control Type: Actualed-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.2
Intersection Capacity Utilization 59.6%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Course shown is maximum after two cycles. Intersection LOS: B ICU Level of Service B

Oueue shown is maximum after two cycles.

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



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		4			4		7	ĵ»			4		
Volume (vph)	0	0	129	59	0	51	253	451	34	20	65	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0		
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00		
Frt		0.86			0.94		1.00	0.99			0.97		
Flt Protected		1.00			0.97		0.95	1.00			0.99		
Satd. Flow (prot)		822			1446		902	1827			1387		
Flt Permitted		1.00			0.75		0.68	1.00			0.89		
Satd. Flow (perm)		822			1108		643	1827			1245		
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	140	64	0	55	275	490	37	22	71	32	
RTOR Reduction (vph)	0	112	0	0	87	0	0	2	0	0	9	0	
Lane Group Flow (vph)	0	28	0	0	32	0	275	525	0	0	116	0	
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%	
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA		
Protected Phases		4			8			2			6		
Permitted Phases	4			8			2			6			
Actuated Green, G (s)		15.0			15.0		43.6	43.6			43.6		
Effective Green, g (s)		16.0			16.0		44.6	44.6			44.6		
Actuated g/C Ratio		0.20			0.20		0.56	0.56			0.56		
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0		
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0		
Lane Grp Cap (vph)		164			221		358	1018			694		
v/s Ratio Prot		c0.03						0.29					
v/s Ratio Perm					0.03		c0.43				0.09		
v/c Ratio		0.17			0.14		0.77	0.52			0.17		
Uniform Delay, d1		26.5			26.4		13.7	11.0			8.6		
Progression Factor		1.00			1.00		0.85	0.85			1.00		
Incremental Delay, d2		0.2			0.3		12.3	1.5			0.5		
Delay (s)		26.7			26.7		23.9	10.9			9.2		
Level of Service		С			С		С	В			Α		
Approach Delay (s)		26.7			26.7			15.4			9.2		
Approach LOS		С			С			В			Α		
Intersection Summary													
HCM 2000 Control Delay			17.2	HO	CM 2000 L	evel of Se	ervice		В				
HCM 2000 Volume to Capacity	ratio		0.57										
Actuated Cycle Length (s)			80.0		ım of lost t				15.0				
Intersection Capacity Utilization			59.6%	IC	U Level of	Service			В				
Analysis Period (min)			15										

	→	•	+	4	*	<i>></i>	>	 	4	
Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑ ↑	7	4	77	NDK	TIDITE	JDE	41	7	
Volume (vph)	467	281	8	724	39	449	75	583	518	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	12	11	12	13	12	12	11	
Grade (%)	0%		0%					0%		
Storage Length (ft)		200		300	0		0		0	
Storage Lanes		1		2	1		0		1	
Taper Length (ft)				25			25			
Satd. Flow (prot)	3282	1487	1776	3164	1278	0	0	2910	1516	
Flt Permitted				0.950				0.994		
Satd. Flow (perm)	3282	1487	1776	3164	1278	0	0	2910	1516	
Right Turn on Red		Yes				Yes			Yes	
Satd. Flow (RTOR)		*40			*95				563	
Link Speed (mph)	30		30					30		
Link Distance (ft)	312		189					283		
Travel Time (s)	7.1		4.3					6.4		
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr)										
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	
Parking (#/hr)		-				-		-		
Mid-Block Traffic (%)	0%		0%					0%		
Shared Lane Traffic (%)	- 0,0		0,0					- 0.0		
Lane Group Flow (vph)	508	305	9	787	530	0	0	716	563	
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2			3		9
Permitted Phases		4		_	3		3		3	
Detector Phase	4	4	8	2	2		3	3	3	
Switch Phase	•			_	-				Ü	
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0		6.0	6.0	6.0	4.0
Minimum Split (s)	13.0	15.0	14.0	15.0	15.0		15.0	15.0	15.0	34.0
Total Split (s)	16.0	28.0	16.0	28.0	28.0		32.0	32.0	32.0	34.0
Total Split (%)	14.5%	25.5%	14.5%	25.5%	25.5%		29.1%	29.1%	29.1%	31%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	2.0
All-Red Time (s)	4.0	4.0	5.0	4.0	4.0		4.0	4.0	4.0	1.0
	-2.0	-2.0	-2.0	-2.0	-2.0		4.0	-2.0	0.0	1.0
Lost Time Adjust (s)										
Total Lost Time (s)	5.0	5.0 Lead	6.0	5.0	5.0 Lead		Log	5.0	7.0	
Lead/Lag		Lead		Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?	Name	C Males	None	CAR	Chim		A Alm	p. 41	p. Alim	Mona
Recall Mode	None	C-Min	None	C-Min	C-Min		Min	Min	Min	None
Act Effet Green (s)	26.6	59.4	25.6	27.8	59.8			27.0	25.0	
Actuated g/C Ratio	0.24	0.54	0.23	0.25	0.54			0.25	0.23	
v/c Ratio	0.64	0.37	0.02	0.98	0.72			1.00	0.72	
Control Delay	45.3	19.1	43.6	62.9	25.0			73.2	5.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	45.3	19.1	43.6	62.9	25.0			73.2	5.8	
LOS	D	В	D	E	С			Ε	Α	
Approach Delay	35.5		43.6					43.5		
Approach LOS	D		D					D		
Queue Length 50th (ft)	163	77	5	300	260			190	0	
Queue Length 95th (ft)	m#375	m239	22	m#405	m336			173	0	
Internal Link Dist (ft)	232		109					203		
Turn Bay Length (ft)		200		300						
Base Capacity (vph)	792	821	412	800	738			714	779	
Starvation Cap Reductn	0	0	0	0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	
Storage Cap Reductn	0	0	0	0	0			0	0	
Reduced v/c Ratio	0.64	0.37	0.02	0.98	0.72			1.00	0.72	
	0.01	0.07	0.02	3.70	0.72				0.72	
Intersection Summary										
	Other									
Cycle Length: 110										
Actuated Cycle Length: 110										

Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBL, Start of Green
Natural Cycle: 130
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 43.2
Intersection Capacity Utilization 73.9%
Analysis Period (min) 15

User Entered Value

95th percentile volume exceeds capacity, queue may be
4.

Intersection LOS: D ICU Level of Service D

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.

Splits and Phases: 17: Transportation Way/SR-14 #10 & Porter St/Ramp S-A & Ramp S-D **3** ø2 (R) **#1**ø9

	→	•	←	1	7	/	/		4
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	^	7	4	ሻሻ	Ž.			414	7
Volume (vph)	467	281	8	724	39	449	75	583	518
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	12	11	12	13	12	12	11
Total Lost time (s)	5.0	5.0	6.0	5.0	5.0			5.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.95	1.00
Frt	1.00	0.85	1.00	1.00	0.85			1.00	0.85
Flt Protected	1.00	1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (prot)	3282	1487	1776	3164	1278			2910	1516
Flt Permitted	1.00	1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (perm)	3282	1487	1776	3164	1278			2910	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	508	305	9	787	42	488	82	634	563
RTOR Reduction (vph)	0	21	0	0	42	0	0	034	435
Lane Group Flow (vph)	508	284	9	787	481	0	0	716	128
Heavy Vehicles (%)	10%	204 5%	7%	7%	100%	20%	80%	16%	3%
						20%			
Turn Type	NA 4	pm+ov 2	NA 8	Prot 2	custom		Perm	NA 3	Perm
Protected Phases	4		8	2	2		2	3	2
Permitted Phases	011	4	00.7	04.0	3		3	05.0	3
Actuated Green, G (s)	24.6	48.6	23.6	24.0	49.0			25.0	25.0
Effective Green, g (s)	26.6	52.6	25.6	26.0	53.0			27.0	25.0
Actuated g/C Ratio	0.24	0.48	0.23	0.24	0.48			0.25	0.23
Clearance Time (s)	7.0	7.0	8.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)	3.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	793	778	413	747	673			714	344
v/s Ratio Prot	c0.15	0.09	0.01	c0.25	0.17				
v/s Ratio Perm		0.10			0.21			0.25	0.08
v/c Ratio	0.64	0.37	0.02	1.05	0.71			1.00	0.37
Uniform Delay, d1	37.4	18.1	32.5	42.0	22.5			41.5	35.9
Progression Factor	0.99	1.04	1.00	1.07	1.33			0.96	0.00
Incremental Delay, d2	1.8	0.3	0.0	38.9	1.5			34.4	0.2
Delay (s)	38.9	19.2	32.6	83.8	31.5			74.1	0.4
Level of Service	D	В	C	65.6 F	C			E	A
Approach Delay (s)	31.5		32.6					41.7	,,
Approach LOS	31.3 C		32.0 C					41.7 D	
**	C		C					U	
Intersection Summary									
HCM 2000 Control Delay			47.3	Н	CM 2000 I	_evel of Se	ervice		D
HCM 2000 Volume to Capacity	y ratio		0.79						
Actuated Cycle Length (s)			110.0	S	um of lost	time (s)			19.0
Intersection Capacity Utilizatio	n		73.9%	10	CU Level o	f Service			D
Analysis Period (min)			15						
c Critical Lane Group									

	_#	→	7	_	←	€_	•	×	/	4	×	1		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3	
Lane Configurations	*	↑ ↑			413						44	7		
Volume (vph)	62	106	377	4	141	192	0	0	0	136	548	324		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)	12	0%	12	12	0%	12	12	0%	12	12	0%	12		
Storage Length (ft)	250	070	0	0	070	0	0	070	0	0	070	150		
Storage Lanes	1		0	0		0	0		0	0		1		
Taper Length (ft)	25		U	25		U	25		U	25		'		
Satd. Flow (prot)	1770	3003	0	0	2771	0	0	0	0	0	3360	1583		
Flt Permitted	0.950	3003	U	U	0.950	U	U	U	U	U	0.990	1303		
	1770	3003	0	0	2635	0	0	0	0	0	3360	1583		
Satd. Flow (perm)	1770	3003		U	2030		U	U		U	3300			
Right Turn on Red		*/0	Yes		200	Yes			Yes			Yes		
Satd. Flow (RTOR)		*60			209							352		
Link Speed (mph)		30			30			30			30			
Link Distance (ft)		430			1019			522			475			
Travel Time (s)		9.8			23.2			11.9			10.8			
Confl. Peds. (#/hr)														
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)		0.0			0.0			3.0			0.0			
Lane Group Flow (vph)	67	525	0	0	366	0	0	0	0	0	744	352		
Turn Type	Prot	NA	U	Perm	NA	U	Ū	U	U	Split	NA	pm+ov		
Protected Phases	1	6		r cilli	2					3piit 4	4	1	3	
Permitted Phases		Ü		2	2					4	4	4	J	
Detector Phase	1	6		2	2					4	4	1		
Switch Phase	- 1	0		2	Z					4	4	- 1		
		10.0		10.0	10.0								1.0	
Minimum Initial (s)	6.0	10.0		10.0	10.0					6.0	6.0	6.0	1.0	
Minimum Split (s)	13.0	17.0		17.0	17.0					13.0	13.0	13.0	27.0	
Total Split (s)	17.0	45.0		28.0	28.0					38.0	38.0	17.0	27.0	
Total Split (%)	15.5%	40.9%		25.5%	25.5%					34.5%	34.5%	15.5%	25%	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0		4.0	4.0					3.0	3.0	4.0	0.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0						-2.0	-2.0		
Total Lost Time (s)	5.0	5.0			5.0						4.0	5.0		
Lead/Lag	Lead			Lag	Lag					Lag	Lag	Lead	Lead	
Lead-Lag Optimize?														
Recall Mode	None	C-Max		C-Max	C-Max					None	None	None	None	
Act Effct Green (s)	10.3	60.0			44.7						30.2	44.5		
Actuated g/C Ratio	0.09	0.55			0.41						0.27	0.40		
v/c Ratio	0.41	0.32			0.31						0.81	0.41		
Control Delay	60.2	22.9			13.4						44.5	3.5		
Queue Delay	0.0	0.0			0.0						0.0	0.0		
Total Delay	60.2	22.9			13.4						44.5	3.5		
LOS	E	С			В						D	A		
Approach Delay		27.2			13.4						31.3			
Approach LOS		C			В						C			
Queue Length 50th (ft)	49	98			30						255	0		
Queue Length 95th (ft)	m81	172			96						314	51		
	11101	350			939			112			395	JI		
Internal Link Dist (ft) Turn Bay Length (ft)	250	330			137			442			370	150		
Base Capacity (vph)	193	1665			1195						1038	868		
Starvation Cap Reductn	193	0			1195						1038	808		
		0			0							0		
Spillback Cap Reductn	0										0			
Storage Cap Reductn	0	0			0						0.72	0		
Reduced v/c Ratio	0.35	0.32			0.31						0.72	0.41		
Intersection Summary														
Area Type:	Other													
Cycle Length: 110	Otrici													
Actuated Cycle Length: 110														
Offset: 0 (0%), Referenced to	nhaca 2.ME	OTL and ful	CDT Ctort	of Croon										
Natural Cycle: 80	huase 5:ME	oı Lallu 0:	LDI, SIdil	or green										
Control Type: Actuated-Coord	dinated													
	unated													
Maximum v/c Ratio: 0.81	0				Laura - 11 -	1.00.0								
Intersection Signal Delay: 26.					tersection		,							
Intersection Capacity Utilization	on 56.1%			IC	CU Level of	Service E	3							
Analysis Period (min) 15														
* User Entered Value														
m Volume for 95th percentil	le queue is m	netered by	upstream	signal.										
Splits and Phases: 22: Tom			ve & Trans	sportation	Way/Harb	orside Dri	ve #10							
≤ _{Ø1}	±						11					14.04		
	≠ ø2	2 (R)					A kø3					ø-	1	
17.5	78 s					7	/ C					138 c		

	_#	→	7	/	+	٤	•	×	<i>></i>	4	×	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	*	† 1>			414						414	7
Volume (vph)	62	106	377	4	141	192	0	0	0	136	548	324
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00
Frt	1.00	0.88			0.91						1.00	0.85
Flt Protected	0.95	1.00			1.00						0.99	1.00
Satd. Flow (prot)	1770	3002			2773						3360	1583
Flt Permitted	0.95	1.00			0.95						0.99	1.00
Satd. Flow (perm)	1770	3002			2635						3360	1583
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)	67	115	410	4	153	209	0	0	0	148	596	352
RTOR Reduction (vph)	0	28	0	0	127	0	0	0	0	0	0	222
Lane Group Flow (vph)	67	497	0	0	239	0	0	0	0	0	744	130
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov
Protected Phases	1	6			2					4	4	1
Permitted Phases				2								4
Actuated Green, G (s)	8.3	56.2			40.9						28.2	36.5
Effective Green, g (s)	10.3	58.2			42.9						30.2	40.5
Actuated g/C Ratio	0.09	0.53			0.39						0.27	0.37
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0
Lane Grp Cap (vph)	165	1588			1027						922	582
v/s Ratio Prot	c0.04	c0.17									c0.22	0.02
v/s Ratio Perm					0.09							0.06
v/c Ratio	0.41	0.31			0.23						0.81	0.22
Uniform Delay, d1	47.0	14.6			22.5						37.2	23.9
Progression Factor	1.15	1.44			1.00						1.00	1.00
Incremental Delay, d2	0.5	0.5			0.5						4.9	0.1
Delay (s)	54.3	21.6			23.0						42.1	24.0
Level of Service	D	С			С						D	С
Approach Delay (s)		25.3			23.0			0.0			36.3	
Approach LOS		С			С			Α			D	
Intersection Summary												
HCM 2000 Control Delay			30.8	H	CM 2000 L	evel of Se	rvice		С			
HCM 2000 Volume to Capac	ity ratio		0.46									
Actuated Cycle Length (s)			110.0		um of lost				17.0			
Intersection Capacity Utilizati	ion		56.1%	IC	U Level of	Service			В			
Analysis Period (min)			15									

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9	
ane Configurations			77	*	†		*				^					
olume (vph)	0	0	258	183	153	0	407	0	0	0	161	0				
leal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
ane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12				
irade (%)		0%			0%			0%			0%					
torage Length (ft)	0		0	100		0	0		0	0		0				
torage Lanes	0		2	1		0	1		0	0		0				
aper Length (ft)	25			25			25			25						
atd. Flow (prot)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0				
t Permitted		_		0.950		_	0.950	_	_	_		_				
atd. Flow (perm)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0				
Right Turn on Red			Yes			Yes			Yes			Yes				
atd. Flow (RTOR)		20	578		20			20			20					
ink Speed (mph)		30			30			30			30					
nk Distance (ft)		344			1001			716			257					
ravel Time (s)		7.8			22.8			16.3			5.8					
onfl. Peds. (#/hr)																
onfl. Bikes (#/hr) eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%				
us Blockages (#/hr)	14%	0	14%	3%	40%	3% 0	14%	14%	1470	29%	29%	29%				
arking (#/hr)	U	U	U	U	U	U	U	U	U	U	U	U				
lid-Block Traffic (%)		0%			0%			0%			0%					
hared Lane Traffic (%)		070			070			070			070					
ane Group Flow (vph)	0	0	280	199	166	0	442	0	0	0	175	0				
urn Type	U	U	pt+ov	pm+pt	NA	· ·	Prot	U	· ·	U	NA	0				
rotected Phases			3 9	1	6		3 9				4		2	3	9	
ermitted Phases			2	6	Ü		0,				•		-	Ū	•	
etector Phase			2	1	6		3				4					
witch Phase																
linimum Initial (s)				6.0	6.0						10.0		6.0	6.0	4.0	
linimum Split (s)				12.0	12.0						15.5		12.0	11.5	20.0	
otal Split (s)				12.0	26.0						21.0		14.0	23.0	20.0	
otal Split (%)				13.3%	28.9%						23.3%		16%	26%	22%	
ellow Time (s)				3.0	3.0						4.0		3.0	3.0	2.0	
II-Red Time (s)				3.0	3.0						1.5		3.0	2.5	1.0	
ost Time Adjust (s)				-1.0	-1.0						-1.0					
otal Lost Time (s)				5.0	5.0						4.5					
ead/Lag				Lead							Lag		Lag	Lead		
ead-Lag Optimize?																
ecall Mode				None	None						None		None	None	None	
ct Effct Green (s)			33.8	19.7	19.7		21.2				13.4					
ctuated g/C Ratio			0.49	0.29	0.29		0.31				0.20					
c Ratio			0.18	0.40	0.43		0.90				0.61					
ontrol Delay			0.3	25.0	26.7		46.8				37.2					
ueue Delay			0.0	0.0	0.0		0.0				0.0					
otal Delay			0.3	25.0	26.7		46.8				37.2					
OS			Α	С	С		D				D					
pproach Delay					25.8						37.2					
pproach LOS					С						D					
ueue Length 50th (ft)			0	62	52		171				63					
ueue Length 95th (ft)			0	165	147		301				#176					
ternal Link Dist (ft)		264		400	921			636			177					
urn Bay Length (ft)			1,450	100	40.4		F0/				0/4					
ase Capacity (vph)			1459	503	424		506				361					
tarvation Cap Reductn			0	0	0		0				0					
pillback Cap Reductn			0	0	0		0				0					
torage Cap Reductn			0 10	0.40	0.20		0 07				0 49					
educed v/c Ratio			0.19	0.40	0.39		0.87				0.48					
tersection Summary																
rea Type: Othe	r															
Cycle Length: 90																
ctuated Cycle Length: 68.6																
atural Cycle: 75																
ontrol Type: Actuated-Uncoordina	ated															
aximum v/c Ratio: 0.90																
tersection Signal Delay: 29.1					tersection											
tersection Capacity Utilization 52.	.4%			IC	U Level o	Service A	A									
nalysis Period (min) 15																

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

Queue shown is maximum after two cycles.

Splits and Phases: 25: Hotel Drive & SR-2/Ramp D-S **♦** ø9 **\$** ø3

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations			77	*	†		75				†		
Volume (vph)	0	0	258	183	153	0	407	0	0	0	161	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)			4.5	5.0	5.0		4.5				4.5		
Lane Util. Factor			0.88	1.00	1.00		1.00				1.00		
Frt			0.85	1.00	1.00		1.00				1.00		
Flt Protected			1.00	0.95	1.00		0.95				1.00		
Satd. Flow (prot)			2493	1752	1357		1583				1473		
Flt Permitted			1.00	0.95	1.00		0.95				1.00		
Satd. Flow (perm)			2493	1752	1357		1583				1473		
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	280	199	166	0	442	0	0	0	175	0	
RTOR Reduction (vph)	0	0	164	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	116	199	166	0	442	0	0	0	175	0	
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%	
Turn Type			pt+ov	pm+pt	NA		Prot				NA		
Protected Phases			3 9	1	6		3 9				4		
Permitted Phases			2	6									
Actuated Green, G (s)			29.3	18.7	18.7		22.7				12.4		
Effective Green, g (s)			29.3	19.7	19.7		21.7				13.4		
Actuated g/C Ratio			0.41	0.28	0.28		0.31				0.19		
Clearance Time (s)				6.0	6.0						5.5		
Vehicle Extension (s)				2.0	2.0						2.0		
Lane Grp Cap (vph)			1031	487	377		485				278		
v/s Ratio Prot			0.03	0.04	c0.12		c0.28				c0.12		
v/s Ratio Perm			0.01	0.07									
v/c Ratio			0.11	0.41	0.44		0.91				0.63		
Uniform Delay, d1			12.8	20.8	21.0		23.6				26.4		
Progression Factor			1.00	1.00	1.00		1.00				1.00		
Incremental Delay, d2			0.0	0.2	0.3		21.0				3.2		
Delay (s)			12.8	21.0	21.3		44.6				29.6		
Level of Service			В	С	С		D				С		
Approach Delay (s)		12.8			21.1			44.6			29.6		
Approach LOS		В			С			D			С		
Intersection Summary													
HCM 2000 Control Delay			28.7	H	CM 2000 L	evel of Se	ervice		С				
HCM 2000 Volume to Capacity	ratio		0.75										
Actuated Cycle Length (s)			70.8		um of lost				22.0				
Intersection Capacity Utilization			52.4%	IC	U Level of	Service			Α				
Analysis Period (min)			15										

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ane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	
ane Configurations		4	7	*		7		∱ }			41			
/olume (vph)	244	52	601	154	0	123	0	41	306	181	421	0		
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
ane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		1	1		1	0		0	0		0		
aper Length (ft)	25			25			25			25				
Satd. Flow (prot)	0	1555	1468	1480	0	1369	0	2595	0	0	3068	0		
It Permitted		0.960		0.950							0.705			
Satd. Flow (perm)	0	1555	1468	1480	0	1369	0	2595	0	0	2196	0		
ight Turn on Red			Yes			Yes			Yes			Yes		
atd. Flow (RTOR)			497			134		333						
ink Speed (mph)		30			30			30			30			
ink Distance (ft)		662			390			344			716			
avel Time (s)		15.0			8.9			7.8			16.3			
onfl. Peds. (#/hr)														
onfl. Bikes (#/hr)														
eak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
rowth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
eavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
us Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
arking (#/hr)				-	-	-	-				-	-		
id-Block Traffic (%)		0%			0%			0%			0%			
hared Lane Traffic (%)														
ine Group Flow (vph)	0	322	653	167	0	134	0	378	0	0	655	0		
ırn Type	Split	NA	Prot	Prot	-	Prot	-	NA	-	Perm	NA	-		
rotected Phases	4	4	4	3		3		1			1		2	
ermitted Phases	•		•	Ū				•		1	•		-	
etector Phase	4	4	4	3		3		1		1	1			
vitch Phase	•		•	Ū		Ū		•		•				
inimum Initial (s)	7.0	7.0	7.0	5.0		5.0		7.0		7.0	7.0		1.0	
inimum Split (s)	12.0	12.0	12.0	10.0		10.0		13.0		13.0	13.0		22.0	
otal Split (s)	23.0	23.0	23.0	15.0		15.0		30.0		30.0	30.0		22.0	
otal Split (%)	25.6%	25.6%	25.6%	16.7%		16.7%		33.3%		33.3%	33.3%		24%	
ellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0		2.0	
II-Red Time (s)	1.0	1.0	1.0	1.0		1.0		2.0		2.0	2.0		0.0	
	1.0	-1.0	-1.0	-1.0		-1.0		-2.0		2.0	-2.0		0.0	
ost Time Adjust (s)														
otal Lost Time (s)	Lac	4.0	4.0	4.0 Lead		4.0 Lead		4.0 Lead		Lead	4.0 Lead		Log	
ead/Lag ead-Lag Optimize?	Lag Yes	Lag Yes	Lag Yes	Yes		Yes		Yes		Yes	Yes		Lag Yes	
ecall Mode														
	None	None	None	None		None		Min		Min	Min		None	
ct Effct Green (s)		19.2	19.2	11.1		11.1		26.3			26.3			
ctuated g/C Ratio		0.27	0.27	0.15		0.15		0.36			0.36			
c Ratio		0.78	0.86	0.74		0.41		0.33			0.82			
ontrol Delay		41.8	21.1	52.4		10.9		4.7			33.1			
ueue Delay		0.0	0.0	0.0		0.0		0.0			0.0			
otal Delay		41.8	21.1	52.4		10.9		4.7			33.1			
OS		D	С	D		В		A			C			
oproach Delay		27.9						4.7			33.1			
proach LOS		C				_		A			C			
ueue Length 50th (ft)		121	52	67		0		5			123			
ueue Length 95th (ft)		#351	#327	#216		52		43			#322			
ternal Link Dist (ft)		582			310			264			636			
rn Bay Length (ft)														
se Capacity (vph)		413	755	227		323		1155			798			
arvation Cap Reductn		0	0	0		0		0			0			
pillback Cap Reductn		0	0	0		0		0			0			
torage Cap Reductn		0	0	0		0		0			0			
Reduced v/c Ratio		0.78	0.86	0.74		0.41		0.33			0.82			
ntersection Summary														
	Other													
ycle Length: 90	Julio													
tuated Cycle Length: 72.4														
atural Cycle Length. 72.4														

Intersection LOS: C ICU Level of Service C

Actuated Cycle Length: 72.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 26.4
Intersection Capacity Utilization 72.6%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 27: Hotel Drive & TWT Off-Ramp/Airport Way **≯**ø3 **♣**ø4 AA_{ø2}

	۶	-	•	•	—	•	•	†	~	-	ļ	4		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4	7	*		7		† 1>			414			
Volume (vph)	244	52	601	154	0	123	0	41	306	181	421	0		
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		4.0			4.0			
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95			
Frt		1.00	0.85	1.00		0.85		0.87			1.00			
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.99			
Satd. Flow (prot)		1556	1468	1480		1369		2594			3069			
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.70			
Satd. Flow (perm)		1556	1468	1480		1369		2594			2195			
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)	265	57	653	167	0	134	0	45	333	197	458	0		
RTOR Reduction (vph)	0	0	368	0	0	114	0	214	0	0	0	0		
Lane Group Flow (vph)	0	322	285	167	0	20	0	164	0	0	655	0		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA			
Protected Phases	4	4	4	3		3		1			1			
Permitted Phases										1				
Actuated Green, G (s)		18.2	18.2	10.1		10.1		24.3			24.3			
Effective Green, g (s)		19.2	19.2	11.1		11.1		26.3			26.3			
Actuated g/C Ratio		0.26	0.26	0.15		0.15		0.36			0.36			
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0			
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0			
Lane Grp Cap (vph)		404	381	222		205		924			782			
v/s Ratio Prot		c0.21	0.19	c0.11		0.01		0.06						
v/s Ratio Perm											c0.30			
v/c Ratio		0.80	0.75	0.75		0.10		0.18			0.84			
Uniform Delay, d1		25.5	25.1	30.0		27.0		16.3			21.8			
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00			
Incremental Delay, d2		9.8	6.9	12.0		0.1		0.1			7.8			
Delay (s)		35.3	32.0	42.0		27.1		16.4			29.6			
Level of Service		D	С	D		С		В			С			
Approach Delay (s)		33.1			35.4			16.4			29.6			
Approach LOS		С			D			В			С			
Intersection Summary														
HCM 2000 Control Delay			29.7	HO	CM 2000 L	evel of Se	rvice		С					
HCM 2000 Volume to Capacity ra	tio		0.76											
Actuated Cycle Length (s)			73.8	Su	um of lost	time (s)			14.0					
Intersection Capacity Utilization			72.6%	IC	U Level of	Service			С					
Analysis Period (min)			15											

	۶	•	4	†	ļ	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations	À			^	†		
Volume (vph)	298	63	0	440	253	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0	0%	0%	^	
Storage Length (ft)	0	0	0			0	
Storage Lanes Taper Length (ft)	25	0	25			U	
Satd. Flow (prot)	1722	0	0	1652	1610	0	
Flt Permitted	0.960	U	U	1002	1010	U	
Satd. Flow (perm)	1722	0	0	1652	1610	0	
Right Turn on Red	1/22	Yes	U	1002	1010	Yes	
Satd. Flow (RTOR)	14	163				103	
Link Speed (mph)	30			30	30		
Link Distance (ft)	499			417	331		
Travel Time (s)	11.3			9.5	7.5		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	392	0	0	478	275	0	
Turn Type	Perm			NA	NA		
Protected Phases				1	1		2
Permitted Phases	3						
Detector Phase	3			1	1		
Switch Phase	0.0			0.0	0.0		4.0
Minimum Initial (s)	8.0 13.0			8.0 13.0	8.0 13.0		19.0
Minimum Split (s) Total Split (s)	30.0			30.0	30.0		20.0
Total Split (%)	37.5%			37.5%	37.5%		25%
Yellow Time (s)	37.576			3.0	37.5%		2.0
All-Red Time (s)	2.0			2.0	2.0		1.0
Lost Time Adjust (s)	-1.0			-1.0	-1.0		1.0
Total Lost Time (s)	4.0			4.0	4.0		
Lead/Lag				Lead	Lead		Lag
Lead-Lag Optimize?				Yes	Yes		Yes
Recall Mode	None			C-Max	C-Max		None
Act Effct Green (s)	22.2			46.0	46.0		
Actuated g/C Ratio	0.28			0.58	0.58		
v/c Ratio	0.80			0.50	0.30		
Control Delay	38.7			17.0	11.5		
Queue Delay	0.3			0.0	0.3		
Total Delay	39.0			17.0	11.8		
LOS	D			В	В		
Approach Delay	39.0			17.0	11.8		
Approach LOS	D			В	В		
Queue Length 50th (ft)	173			117	47		
Queue Length 95th (ft)	255			#400	186		
Internal Link Dist (ft)	419			337	251		
Turn Bay Length (ft)	F70			0.40	007		
Base Capacity (vph)	573			949	926		
Starvation Cap Reductn	0			0	253		
Spillback Cap Reductn	19			21	0		
Storage Cap Reductn Reduced v/c Ratio	0 0.71			0 0.52	0 0.41		
	0.71			0.02	0.41		
Intersection Summary							
Area Type:	Other						
Cycle Length: 80							
Actuated Cycle Length: 80 Offset: 79 (99%), Referenced	d to phase 1.A	IRCR C+^	rt of Cross	1			
Natural Cycle: 65	u to pnase 1:N	лвэв, 2ta	п от егеет	1			
Control Type: Actuated-Coor	rdinated						
Maximum v/c Ratio: 0.80	. an iarou						
Intersection Signal Delay: 23	3.3			In	itersection	LOS: C	
Intersection Capacity Utilizat					CU Level of		
Analysis Period (min) 15	110/1 JU.Z /0			- 10	O FEAGURE	Jeivice A	
# 95th percentile volume e:	xceeds canac	ity duene	may he lo	nger			
Ougue shown is maximum			ay be it	goi.			

Queue shown is maximum after two cycles.

Splits and Phases: 33: SR-2/Frankfort Street & Route 1A NB Off-Ramp

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	₩.	LUIN	INDE	ND1	<u> </u>	JUIN
Volume (vph)	298	63	0	440	253	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	.,	.,	4.0	4.0	.,
Lane Util. Factor	1.00			1.00	1.00	
Frt	0.98			1.00	1.00	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1722			1652	1610	
Flt Permitted	0.96			1.00	1.00	
Satd. Flow (perm)	1722			1652	1610	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	324	68	0	478	275	0
RTOR Reduction (vph)	10	0	0	0	0	0
Lane Group Flow (vph)	382	0	0	478	275	0
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%
Turn Type	Perm			NA	NA	
Protected Phases				1	1	
Permitted Phases	3					
Actuated Green, G (s)	21.2			42.6	42.6	
Effective Green, g (s)	22.2			43.6	43.6	
Actuated g/C Ratio	0.28			0.55	0.55	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	477			900	877	
v/s Ratio Prot				c0.29	0.17	
v/s Ratio Perm	c0.22					
v/c Ratio	0.80			0.53	0.31	
Uniform Delay, d1	26.8			11.7	10.0	
Progression Factor	1.00			1.00	0.86	
Incremental Delay, d2	8.8			2.2	0.9	
Delay (s)	35.7			13.9	9.5	
Level of Service	D			В	Α	
Approach Delay (s)	35.7			13.9	9.5	
Approach LOS	D			В	Α	
Intersection Summary						
HCM 2000 Control Delay			20.3	НС	CM 2000 L	evel of Service
HCM 2000 Volume to Capaci	tv ratio		0.60			
Actuated Cycle Length (s)	,		80.0	Su	m of lost t	time (s)
Intersection Capacity Utilization	on		50.2%		U Level of	
Analysis Period (min)			15			
a Critical Lana Croup						

	~	₹	*	~	Ĺ	×
Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	*	7	1 >			4
Volume (vph)	106	49	391	87	30	286
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	200		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1367	1188	1602	0	0	1651
Flt Permitted	0.950					0.995
Satd. Flow (perm)	1367	1188	1602	0	0	1651
Link Speed (mph)	30		30			30
Link Distance (ft)	331		958			417
Travel Time (s)	7.5		21.8			9.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	32%	36%	18%	5%	38%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	115	53	520	0	0	344
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized	Otriei					
Intersection Capacity Utilizat	ion F2 60/			IC	III ovol o	f Service A
Analysis Period (min) 15	1011 02.0%			IC	o revelo	Service F
Analysis renou (IIIII) 13						

	Ţ	*	×	~	Ĺ	×
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations	*	7	4			4
Volume (veh/h)	106	49	391	87	30	286
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	115	53	425	95	33	311
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		8				
Median type		3	None			None
Median storage veh)			140110			110110
Upstream signal (ft)						417
pX, platoon unblocked	0.93					117
vC, conflicting volume	848	472			520	
vC1, stage 1 conf vol	310	172			520	
vC2, stage 2 conf vol						
vCu, unblocked vol	796	472			520	
tC, single (s)	6.7	6.6			4.5	
tC, 2 stage (s)	0.7	0.0			1.0	
tF (s)	3.8	3.6			2.5	
p0 queue free %	59	90			96	
cM capacity (veh/h)	283	528			886	
					000	
Direction, Lane #	NW 1	NE 1	SW 1			
Volume Total	168	520	343			
Volume Left	115	0	33			
Volume Right	53	95	0			
cSH	414	1700	886			
Volume to Capacity	0.41	0.31	0.04			
Queue Length 95th (ft)	48	0	3			
Control Delay (s)	21.9	0.0	1.3			
Lane LOS	С		Α			
Approach Delay (s)	21.9	0.0	1.3			
Approach LOS	С					
Intersection Summary						
Average Delay			4.0			
Intersection Capacity Utilization			52.6%	IC	U Level of S	Service
Analysis Period (min)			15	10	5 20VOI 01 .	JOI VIOC
Analysis i criou (IIIII)			13			

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Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ħ₩			41	↑ ↑	
Volume (vph)	71	8	8	139	48	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft) Grade (%)	12 0%	12	12	12 0%	12 0%	12
Storage Length (ft)	0 %	0	0	0 /0	J /0	0
Storage Lanes	2	0	0			0
Taper Length (ft)	25		25			
Satd. Flow (prot) Flt Permitted	3403 0.957	0	0	3529	3274	0
Satd. Flow (perm)	3403	0	0	0.932 3299	3274	0
Right Turn on Red	3703	Yes	U	J£ 17	J214	Yes
Satd. Flow (RTOR)	9				52	
Link Speed (mph)	30			30	30	
Link Distance (ft)	361 8.2			895	973	
Travel Time (s) Confl. Peds. (#/hr)	8.2			20.3	22.1	
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr) Parking (#/hr)	0	0	0	0	0	0
Mid-Block Traffic (%)	0%			0%	0%	
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	0	0	160	104	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases Permitted Phases	4		6	6	2	
Detector Phase	4		6	6	2	
Switch Phase						
Minimum Initial (s)	15.0		6.0	6.0	6.0	
Minimum Split (s)	20.0		11.0	11.0	20.0	
Total Split (s) Total Split (%)	45.0 67.2%		22.0 32.8%	22.0 32.8%	22.0 32.8%	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s)	2.0		2.0	2.0	2.0	
Lost Time Adjust (s)	-1.0			-1.0	-1.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag Lead-Lag Optimize?						
Recall Mode	None		None	None	None	
Act Effct Green (s)	17.6			9.7	9.7	
Actuated g/C Ratio	0.76			0.42	0.42	
v/c Ratio Control Delay	0.03 4.2			0.12 6.5	0.07 4.5	
Queue Delay	4.2 0.0			0.0	4.5 0.0	
Total Delay	4.2			6.5	4.5	
LOS	А			Α	Α	
Approach Delay	4.2			6.5	4.5	
Approach LOS	A			A	A	
Queue Length 50th (ft) Queue Length 95th (ft)	0 13			0 23	0 13	
Internal Link Dist (ft)	281			815	893	
Turn Bay Length (ft)						
Base Capacity (vph)	3403			2656	2645	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.03			0.06	0.04	
	0.00					
Intersection Summary Area Type:	Other					
Cycle Length: 67	Other					
Actuated Cycle Length: 23.1						
Natural Cycle: 40						
Control Type: Actuated-Unco	ordinated					
Maximum v/c Ratio: 0.12						100
Intersection Signal Delay: 5.4					tersection	LOS: A Service A
Intersection Capacity Utilization Analysis Period (min) 15	UII 20.0%			IC	u Level of	Service A
Splits and Phases: 86: Har	borside Drive	& Hyatt D	Orive			
					≯ _{ø4}	
▼ ø2 22 s					- ø4 45 s	
↑ p6						
1 ø6						
22.3						

	•	•	•	†	↓	4
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ሻሻ			414	† 1>	
Volume (vph)	71	8	8	139	48	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.98			1.00	0.93	
Flt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	3405			3529	3274	
Flt Permitted	0.96			0.93	1.00	
Satd. Flow (perm)	3405			3297	3274	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	77	9	9	151	52	52
RTOR Reduction (vph)	7	0	0	0	36	0
Lane Group Flow (vph)	79	0	0	160	68	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Actuated Green, G (s)	3.9			4.8	4.8	
Effective Green, g (s)	4.9			5.8	5.8	
Actuated g/C Ratio	0.26			0.31	0.31	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	3.0			2.0	2.0	
Lane Grp Cap (vph)	892			1022	1015	
v/s Ratio Prot	c0.02				0.02	
v/s Ratio Perm				c0.05		
v/c Ratio	0.09			0.16	0.07	
Uniform Delay, d1	5.2			4.7	4.5	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.0	0.0	
Delay (s)	5.3			4.7	4.6	
Level of Service	A			A	Α	
Approach Delay (s)	5.3			4.7	4.6	
Approach LOS	А			Α	А	
Intersection Summary						
HCM 2000 Control Delay			4.8	HO	CM 2000 L	evel of Service
HCM 2000 Volume to Capacit	ty ratio		0.13			
Actuated Cycle Length (s)			18.7		ım of lost t	
Intersection Capacity Utilization	on		26.6%	IC	U Level of	Service
Analysis Period (min)			15			
c Critical Lane Group						

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		₽			414
Volume (vph)	114	7	434	126	7	199
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Satd. Flow (prot)	1765	0	1807	0	0	3532
Flt Permitted	0.955					0.998
Satd. Flow (perm)	1765	0	1807	0	0	3532
Link Speed (mph)	30		30			30
Link Distance (ft)	78		344			228
Travel Time (s)	1.8		7.8			5.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	609	0	0	224
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization	on 43.9%			IC	U Level of	f Service A

	•	•	†	~	\	ļ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	Y	WDIX	1	NDIX		41
Volume (veh/h)	114	7	434	126	7	4 T
Sign Control	Stop	1	Free	120	*	Free
Grade	0%		0%			0%
Peak Hour Factor		0.00		0.00	0.00	
	0.92	0.92	0.92	0.92		0.92
Hourly flow rate (vph)	124	8	472	137	8	216
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		1	Vone
Median storage veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	664	540			609	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	607	475			548	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	69	98			99	
cM capacity (veh/h)	398	502			953	
					900	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	132	609	80	144		
Volume Left	124	0	8	0		
Volume Right	8	137	0	0		
cSH	403	1700	953	1700		
Volume to Capacity	0.33	0.36	0.01	0.08		
Queue Length 95th (ft)	35	0	1	0		
Control Delay (s)	18.2	0.0	0.9	0.0		
Lane LOS	C	0.0	Α	0.0		
Approach Delay (s)	18.2	0.0	0.3			
Approach LOS	10.2 C	0.0	0.3			
	C					
* *						
Intersection Summary						
Intersection Summary Average Delay			2.6			
Intersection Summary Average Delay Intersection Capacity Utilization			43.9%	ICI	U Level of Se	ervice
Intersection Summary Average Delay				ICI	U Level of Se	ervice

	•	-	←	•	4	†	~	•
Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	ሻ	^	∱ }		ሻ	∱ }		ሻ
Volume (vph)	63	629	190	86	606	923	33	39
Ideal Flow (vphpl) Lane Width (ft)	1900 11	1900 12	1900 12	1900 12	1900 11	1900 12	1900 12	1900 13
Grade (%)		0%	0%	12	- 11	0%	12	13
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25			V	25		V	
Right Turn on Red Link Speed (mph)		30	30	Yes		30	Yes	
Link Distance (ft)		160	642			170		
Travel Time (s)		3.6	14.6			3.9		
Confl. Peds. (#/hr)								
Confl. Bikes (#/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Peak Hour Factor Growth Factor	0.92 100%	0.92	0.92 100%	0.92 100%	0.92 100%	0.92 100%	0.92 100%	0.92
Heavy Vehicles (%)	100%	3%	100% 4%	18%	100%	100%	100%	100%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0
Parking (#/hr)					Ü			
Mid-Block Traffic (%)		0%	0%			0%		
Shared Lane Traffic (%)			222		(50	1000	•	
Lane Group Flow (vph)	68 Prot	684	300 NA	0	659 Drot	1039 NA	0	42 Prot
Turn Type Protected Phases	Prot 1	NA 6	NA 2		Prot 3	NA 8		Prot 4
Permitted Phases		0	Z		3	0		4
Detector Phase	1	6	2		3	8		4
Switch Phase								
Minimum Initial (s)	6.0	10.0	10.0		10.0	6.0		6.0
Minimum Split (s)	12.0	16.0	27.0		15.0	24.0		12.0
Total Split (s)	12.0	39.0	27.0		39.0	51.0		12.0
Total Split (%) Maximum Green (s)	13.3% 6.0	43.3% 33.0	30.0% 21.0		43.3% 34.0	56.7% 45.0		13.3%
Yellow Time (s)	3.0	3.0	3.0		34.0	3.0		3.0
All-Red Time (s)	3.0	3.0	3.0		2.0	3.0		3.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0		-2.0	-2.0		-2.0
Total Lost Time (s)	4.0	4.0	4.0		3.0	4.0		4.0
Lead/Lag	Lead		Lag		Lag			Lead
Lead-Lag Optimize?	2.0	2.0	2.0		2.0	2.0		2.0
Vehicle Extension (s) Minimum Gap (s)	2.0 3.0	2.0	2.0 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	None	C-Max	C-Max		None	None		None
Walk Time (s)			5.0			5.0		
Flash Dont Walk (s)			16.0			13.0		
Pedestrian Calls (#/hr) Act Effct Green (s)	8.1	39.1	5 29.4		36.7	5 42.9		8.0
Actuated g/C Ratio	0.09	0.43	0.33		0.41	0.48		0.09
v/c Ratio	0.46	0.45	0.28		0.93	0.61		0.51
Control Delay	45.8	29.1	19.9		48.8	18.7		62.3
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	45.8	29.1	19.9		48.8	18.7		62.3
LOS Approach Delay	D	C 30.6	B 19.9		D	B 30.3		E
Approach LOS		30.6 C	19.9 B			30.3 C		
Queue Length 50th (ft)	41	200	53		351	193		23
Queue Length 95th (ft)	m69	211	94		#587	262		#68
Internal Link Dist (ft)		80	562			90		
Turn Bay Length (ft)	200	45.5	45			45		
Base Capacity (vph)	149	1522	1087		707	1859		82
Starvation Cap Reductn	0	0	0		0	0		0
Spillback Cap Reductn Storage Cap Reductn	0	0	0		0	0		0
Reduced v/c Ratio	0.46	0.45	0.28		0.93	0.56		0.51
Intersection Summary	2.10	2.10			2.70	2.50		
	Other							
Cycle Length: 90	Julei							
Actuated Cycle Length: 90								
Offset: 0 (0%), Referenced to	phase 2:WB	BT and 6:E	BT, Start o	of Green				
Natural Cycle: 90								
Control Type: Actuated-Coord	dinated							
Maximum v/c Ratio: 0.93	0				toro = = "	1.00:0		
Intersection Signal Delay: 29. Intersection Capacity Utilization					tersection	LOS: C f Service C		
Analysis Period (min) 15	UII 04.3%			IC	O revei 0	Service C	,	
# 95th percentile volume ex	ceeds canac	ity, gueue	may he lo	nger.				
Queue shown is maximum	after two cv	cles.	ay DC 10	yoi.				
m Volume for 95th percentil			upstream	signal				
	- quodo 10 11	. 5.0. 5u by	aporrouil!	-igilian.				

Lanes, Volumes, Limings

\\vhb\proj\Wat-EV\13220.00\tech\5 Traffic\tech\SYNCHRO\2030 Build SUN_with garage.syn

VHB/elt

	۶	→	←	•	4	†	/	•
Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	*	^	† }		*	† 1>		ሻ
Volume (vph)	63	629	190	86	606	923	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	1700	12	12	12	11	12	12	13
Total Lost time (s)	4.0	4.0	4.0	12	3.0	4.0	12	4.0
		0.95	0.95			0.95		
Lane Util. Factor	1.00				1.00			1.00
Frt	1.00	1.00	0.95		1.00	0.99		1.00
Flt Protected	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (prot)	1662	3505	3177		1728	3556		933
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1662	3505	3177		1728	3556		933
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	68	684	207	93	659	1003	36	42
RTOR Reduction (vph)	0	0	55	0	0	3	0	0
Lane Group Flow (vph)	68	684	245	0	659	1036	0	42
Heavy Vehicles (%)	5%	3%	4%	18%	1%	1%	1%	100%
Turn Type	Prot	NA	NA		Prot	NA		Prot
Protected Phases	1	6	2		3	8		4
Permitted Phases		U			3	U		4
Actuated Green, G (s)	4.9	34.7	23.8		34.7	43.3		3.6
Effective Green, g (s)	6.9	34.7	25.8		34.7	45.3		5.6
Actuated g/C Ratio	0.08	0.41	0.29		0.41	0.50		0.06
Clearance Time (s)	6.0	6.0	6.0		5.0	6.0		6.0
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0
Lane Grp Cap (vph)	127	1429	910		704	1789		58
v/s Ratio Prot	0.04	c0.20	0.08		c0.38	c0.29		0.05
v/s Ratio Perm								
v/c Ratio	0.54	0.48	0.27		0.94	0.58		0.72
Uniform Delay, d1	40.0	19.6	24.8		25.5	15.7		41.4
Progression Factor	0.96	1.48	1.03		1.00	1.01		1.00
Incremental Delay, d2	1.8	0.9	0.7		19.7	0.5		35.9
Delay (s)	40.0	30.0	26.2		45.3	16.2		77.3
Level of Service	D	C	C		D	В		77.5 E
Approach Delay (s)	U	30.9	26.2		J	27.5		L
Approach LOS		30.9 C	20.2 C			27.5 C		
**		C	C			C		
Intersection Summary								
HCM 2000 Control Delay			29.0	HO	CM 2000 L	evel of Se	rvice	
HCM 2000 Volume to Capacity	y ratio		0.75					
Actuated Cycle Length (s)			90.0	Sı	um of lost	time (s)		
Intersection Capacity Utilization	n		64.3%	IC	U Level of	Service		
Analysis Period (min)			15					
c Critical Lane Group								
Critical Lane Group								

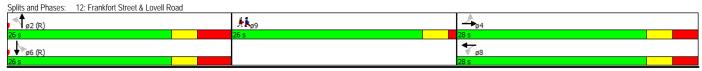
	•	→	•	•	←	•	4	†	/	>	ļ	4		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9	
Lane Configurations		4			4		ሻ	1			4			
Volume (vph)	0	0	61	93	0	78	129	271	20	30	102	46		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		0	0		0	1		0	0		0		
Taper Length (ft)	25			25			25			25				
Right Turn on Red		20	Yes		20	Yes		20	Yes		20	Yes		
Link Speed (mph)		30 70			30 643			30 331			30 442			
Link Distance (ft) Travel Time (s)		1.6			14.6			7.5			10.0			
Confl. Peds. (#/hr)		1.0			14.0			7.5			10.0			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	66	0	0	186	0	140	317	0	0	194	0		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4		0	8		2	2		,	6		9	
Permitted Phases	4	4		8	8		2	2		6	,			
Detector Phase Switch Phase	4	4		8	ð		2	2		6	6			
Minimum Initial (s)	6.0	6.0		15.0	15.0		6.0	6.0		6.0	6.0		4.0	
Minimum Split (s)	12.0	12.0		21.0	21.0		13.0	13.0		13.0	13.0		26.0	
Total Split (s)	28.0	28.0		28.0	28.0		26.0	26.0		26.0	26.0		26.0	
Total Split (%)	35.0%	35.0%		35.0%	35.0%		32.5%	32.5%		32.5%	32.5%		33%	
Maximum Green (s)	22.0	22.0		22.0	22.0		19.0	19.0		19.0	19.0		22.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0		3.0	
All-Red Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0		1.0	
Lost Time Adjust (s)		-1.0			-1.0		-1.0	-1.0			-1.0			
Total Lost Time (s)		5.0			5.0		6.0	6.0			6.0			
Lead/Lag														
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0		3.0	
Minimum Gap (s)	2.0	2.0		3.0	3.0		2.0	2.0		2.0	2.0		3.0	
Time Before Reduce (s) 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		C-Max	C-Max		C-Max	C-Max		None	
Walk Time (s)	Nonc	None		None	Nonc		C-IVIGA	C-IVIGA		G-IVIGA	C-IVIGA		5.0	
Flash Dont Walk (s)													17.0	
Pedestrian Calls (#/hr)													10	
Act Effct Green (s)		16.9			16.9		46.9	46.9			46.9			
Actuated g/C Ratio		0.21			0.21		0.59	0.59			0.59			
v/c Ratio		0.09			0.56		0.38	0.30			0.26			
Control Delay		0.2			19.1		16.3	9.0			12.1			
Queue Delay		0.0			0.0		0.0	0.4			0.0			
Total Delay		0.2			19.1		16.3	9.4			12.1			
LOS		Α			В		В	A			В			
Approach Delay		0.2			19.1			11.5			12.1			
Approach LOS		A 0			B 33		24	B 70			B 29			
Queue Length 50th (ft) Queue Length 95th (ft)		0			90		36 #168	78 143			137			
Internal Link Dist (ft)		1			563		#100	251			362			
Turn Bay Length (ft)					505			231			302			
Base Capacity (vph)		754			417		373	1073			755			
Starvation Cap Reductn		0			0		0	365			0			
Spillback Cap Reductn		0			0		0	0			0			
Storage Cap Reductn		0			0		0	0			0			
Reduced v/c Ratio		0.09			0.45		0.38	0.45			0.26			
Intersection Summary														
Area Type:	Other													
Cycle Length: 80	Outel													
Actuated Cycle Length: 80														
Offset: 0 (0%), Referenced		TL and 6:	SBTL, Sta	rt of Green	n, Master I	ntersection	n							
Natural Cycle: 75	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		., 210	2.20										
Control Type: Actuated-Co	ordinated													
Maximum v/c Ratio: 0.56														
Intersection Signal Delay: 1	12./			In	tersection	I UC · B								

Intersection Signal Delay: 12.4 Intersection Capacity Utilization 56.1% Intersection LOS: B ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.



	•	\rightarrow	•	•	-	•	1	†	1	-	↓	4		
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4			4		7	1>			4			
Volume (vph)	0	0	61	93	0	78	129	271	20	30	102	46		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		5.0			5.0		6.0	6.0			6.0			
Lane Util. Factor		1.00			1.00		1.00	1.00			1.00			
Frt		0.86			0.94		1.00	0.99			0.97			
Flt Protected		1.00			0.97		0.95	1.00			0.99			
Satd. Flow (prot)		822			1446		902	1827			1386			
Flt Permitted		1.00			0.79		0.67	1.00			0.91			
Satd. Flow (perm)		822			1181		637	1827			1275			
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	66	101	0	85	140	295	22	33	111	50		
RTOR Reduction (vph)	0	52	0	0	86	0	0	2	0	0	10	0		
Lane Group Flow (vph)	0	14	0	0	100	0	140	315	0	0	184	0		
Heavy Vehicles (%)	0%	0%	100%	20%	0%	20%	100%	2%	15%	25%	2%	100%		
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4			8			2			6				
Actuated Green, G (s)		15.9			15.9		42.7	42.7			42.7			
Effective Green, g (s)		16.9			16.9		43.7	43.7			43.7			
Actuated g/C Ratio		0.21			0.21		0.55	0.55			0.55			
Clearance Time (s)		6.0			6.0		7.0	7.0			7.0			
Vehicle Extension (s)		2.0			3.0		2.0	2.0			2.0			
Lane Grp Cap (vph)		173			249		347	997			696			
v/s Ratio Prot		0.02						0.17						
v/s Ratio Perm					c0.08		c0.22				0.14			
v/c Ratio		0.08			0.40		0.40	0.32			0.27			
Uniform Delay, d1		25.3			27.2		10.6	10.0			9.6			
Progression Factor		1.00			1.00		0.72	0.70			1.00			
Incremental Delay, d2		0.1			1.1		3.4	0.8			0.9			
Delay (s)		25.4			28.3		11.0	7.7			10.6			
Level of Service		С			С		В	Α			В			
Approach Delay (s)		25.4			28.3			8.7			10.6			
Approach LOS		С			С			Α			В			
Intersection Summary														
HCM 2000 Control Delay			14.4	HO	CM 2000 L	evel of Se	ervice		В					
HCM 2000 Volume to Capacity ra	atio		0.37											
Actuated Cycle Length (s)			80.0	Su	ım of lost t	ime (s)			15.0					
Intersection Capacity Utilization			56.1%	IC	U Level of	Service			В					
Analysis Period (min)			15											

	→	•	+	1	7	<i>></i>	\		4	
Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	^	7	4	ሻሻ	T.		302	41	7	
Volume (vph)	395	288	8	541	26	289	66	405	325	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	11	12	11	12	13	12	12	11	
Grade (%)	0%		0%					0%		
Storage Length (ft)		200		300	0		0		0	
Storage Lanes		1		2	1		0		1	
Taper Length (ft)				25			25			
Right Turn on Red		Yes				Yes			Yes	
Link Speed (mph)	30		30					30		
Link Distance (ft)	312		189					283		
Travel Time (s)	7.1		4.3					6.4		
Confl. Peds. (#/hr)										
Confl. Bikes (#/hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%	
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	
Parking (#/hr)	00/		00/					00/		
Mid-Block Traffic (%)	0%		0%					0%		
Shared Lane Traffic (%)	100	040	•	F00	0.40	^		F40	252	
Lane Group Flow (vph)	429	313	9	588	342	0	0	512	353	
Turn Type	NA	pm+ov	NA		custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2			3		9
Permitted Phases		4			3		3		3	
Detector Phase	4	4	8	2	2		3	3	3	
Switch Phase										
Minimum Initial (s)	6.0	8.0	6.0	8.0	8.0		8.0	8.0	8.0	4.0
Minimum Split (s)	14.0	15.0	14.0	15.0	15.0		15.0	15.0	15.0	34.0
Total Split (s)	15.0	15.0	15.0	15.0	15.0		26.0	26.0	26.0	34.0
Total Split (%)	16.7%	16.7%	16.7%	16.7%	16.7%		28.9%	28.9%	28.9%	38%
Maximum Green (s)	7.0	8.0	7.0	8.0	8.0		19.0	19.0	19.0	31.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	2.0
All-Red Time (s)	5.0	4.0	5.0	4.0	4.0		4.0	4.0	4.0	1.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	0.0	
Total Lost Time (s)	6.0	5.0	6.0	5.0	5.0			5.0	7.0	
Lead/Lag		Lead		Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?		Load					Lug	Lug	Lag	
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0	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		C-Min		C-Min	C-Min		0.0 Min		0.0 Min	
	None	C-IVIII	None	C-IVIII	C-IVIII		IVIII	Min	IVIII	None
Walk Time (s)										7.0
Flash Dont Walk (s)										24.0 5
Pedestrian Calls (#/hr)	21.0	E2.2	21.0	24.2	E1 0			20.0	10.0	5
Act Effct Green (s)	21.0	53.2	21.0	26.2	51.2			20.0	18.0	
Actuated g/C Ratio	0.23	0.59	0.23	0.29	0.57			0.22	0.20	
v/c Ratio	0.56	0.35	0.02	0.64	0.45			0.81	0.60	
Control Delay	36.4	14.0	32.1	25.7	9.4			41.9	5.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0			0.0	0.0	
Total Delay	36.4	14.0	32.1	25.7	9.4			41.9	5.2	
LOS	D	В	С	С	Α			D	Α	
Approach Delay	27.0		32.1					26.9		
Approach LOS	С		С					С		
Queue Length 50th (ft)	113	64	4	88	18			102	0	
Queue Length 95th (ft)	#266	#243	19	m#313	m171			101	0	
Internal Link Dist (ft)	232		109					203		
Turn Bay Length (ft)		200		300						
Base Capacity (vph)	766	895	414	921	766			669	598	
Starvation Cap Reductn	0	0	0	0	0			0	0	
Spillback Cap Reductn	0	0	0	0	0			0	0	
Storage Cap Reductn	0	0	0	0	0			0	0	
Reduced v/c Ratio	0.56	0.35	0.02	0.64	0.45			0.77	0.59	
	0.00	3.00		5.0.	50				,	
Intersection Summary										
Area Type:	Other									
Cycle Length: 90										
Actuated Cycle Length: 90										
Offset: 0 (0%), Referenced to	o phase 2:NB	L, Start of	Green							
Natural Cycle: 90										
Control Type: Actuated-Coor	rdinated									
Maximum v/c Ratio: 0.81										
Intersection Signal Delay: 24	1.3			In	ntersection	LOS: C				
Intersection Capacity Utilizat					CU Level o		3			
Analysis Period (min) 15										
Analysis Period (min) 15 # 95th percentile volume e	exceeds canad	city, aueue	may he lo	onger.						
# 95th percentile volume e			may be lo	onger.						
	m after two cy	/cles.	_							

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

Splits and Phases:



	-	•	•	1	7	~	-	ļ	4
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	^	7	4	ሻሻ	Ž.			47	7
Volume (vph)	395	288	8	541	26	289	66	405	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	1700	12	1700	1700	13	12	12	11
Total Lost time (s)	6.0	5.0	6.0	5.0	5.0	13	12	5.0	7.0
Lane Util. Factor	0.95	1.00	1.00	0.97	1.00			0.95	1.00
Frt	1.00	0.85	1.00	1.00	0.85			1.00	0.85
Fit Protected	1.00	1.00	1.00	0.95	1.00			0.99	1.00
									1516
Satd. Flow (prot)	3282	1487	1776	3164	1276			2868	
Flt Permitted	1.00	1.00	1.00	0.95	1.00			0.99	1.00
Satd. Flow (perm)	3282	1487	1776	3164	1276			2868	1516
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	429	313	9	588	28	314	72	440	353
RTOR Reduction (vph)	0	20	0	0	49	0	0	0	282
Lane Group Flow (vph)	429	293	9	588	293	0	0	512	71
Heavy Vehicles (%)	10%	5%	7%	7%	100%	20%	80%	16%	3%
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm
Protected Phases	4	2	8	2	2			3	
Permitted Phases		4	- 3		3		3	J	3
Actuated Green, G (s)	19.0	40.8	19.0	21.8	39.8		J	18.0	18.0
Effective Green, g (s)	21.0	44.8	21.0	23.8	43.8			20.0	18.0
Actuated g/C Ratio	0.23	0.50	0.23	0.26	0.49			0.22	0.20
Clearance Time (s)	8.0	7.0	8.0	7.0	7.0			7.0	7.0
Vehicle Extension (s)	2.0	2.0	2.0	2.0	2.0			2.0	2.0
Lane Grp Cap (vph)	765	740	414	836	691			637	303
v/s Ratio Prot	c0.13	0.10	0.01	c0.19	0.11				
v/s Ratio Perm		0.09			0.12			0.18	0.05
v/c Ratio	0.56	0.40	0.02	0.70	0.42			0.80	0.23
Uniform Delay, d1	30.4	14.1	26.6	29.9	14.9			33.1	30.2
Progression Factor	0.98	1.03	1.00	0.66	0.86			0.95	0.15
Incremental Delay, d2	0.6	0.1	0.0	3.2	0.1			6.9	0.1
Delay (s)	30.3	14.6	26.6	22.9	12.9			38.3	4.8
Level of Service	C	В	C	C	В			D	A
Approach Delay (s)	23.7	U	26.6	U	U			24.6	Α.
Approach LOS	23.7 C		20.0 C					24.0 C	
Approach LOS			C					C	
Intersection Summary									
HCM 2000 Control Delay			22.4	Н	ICM 2000 L	Level of Se	ervice		С
HCM 2000 Volume to Capaci	ty ratio		0.63						
Actuated Cycle Length (s)	,		90.0	S	um of lost	time (s)			19.0
Intersection Capacity Utilization	on		56.9%		CU Level of	. ,			В
Analysis Period (min)			15	- 10		00			
c Critical Lane Group			13						
c Gritical Earle Group									

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3	
Lane Configurations	*	∱ 1≽			414						414	7		
Volume (vph)	124	80	287	1	54	72	0	0	0	72	273	223		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	250		0	0		0	0		0	0		150		
Storage Lanes	1		0	0		0	0		0	0		1		
Taper Length (ft)	25		V	25		V	25		Vee	25		Vaa		
Right Turn on Red Link Speed (mph)		30	Yes		30	Yes		30	Yes		30	Yes		
Link Distance (ft)		430			1019			522			475			
Travel Time (s)		9.8			23.2			11.9			10.8			
Confl. Peds. (#/hr)		7.0			25.2			11.7			10.0			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	135	399	0	0	138	0	0	0	0	0	375	242		
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov		
Protected Phases	1	6			2					4	4	1	3	
Permitted Phases				2								4		
Detector Phase	1	6		2	2					4	4	1		
Switch Phase														
Minimum Initial (s)	6.0	10.0		10.0	10.0					6.0	6.0	6.0	1.0	
Minimum Split (s)	13.0	17.0		17.0	17.0					13.0	13.0	13.0	27.0	
Total Split (s)	20.0	41.0		21.0	21.0					22.0	22.0	20.0	27.0	
Total Split (%)	22.2%	45.6%		23.3%	23.3%					24.4%	24.4%	22.2%	30%	
Maximum Green (s)	13.0	34.0		14.0	14.0					16.0	16.0	13.0	24.0	
Yellow Time (s)	3.0	3.0		3.0	3.0					3.0	3.0	3.0	3.0	
All-Red Time (s)	4.0	4.0		4.0	4.0					3.0	3.0	4.0	0.0	
Lost Time Adjust (s)	-2.0	-2.0			-2.0						-2.0	-2.0		
Total Lost Time (s)	5.0	5.0			5.0						4.0	5.0		
Lead/Lag	Lead			Lag	Lag					Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	2.0	2.0		2.0	2.0					Yes	Yes	2.0	Yes	
Vehicle Extension (s)	2.0 2.0	2.0 2.0		2.0 2.0	2.0 2.0					2.0	2.0	2.0	3.0	
Minimum Gap (s) Time Before Reduce (s)	0.0	0.0		0.0	0.0					0.0	2.0	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	C-Max		C-Max	C-Max					None	None	None	None	
Walk Time (s)	INOTIC	C-IVIAX		C-IVIAX	C-IVIAX					None	None	None	5.0	
Flash Dont Walk (s)													19.0	
Pedestrian Calls (#/hr)													15	
Act Effct Green (s)	12.6	54.4			36.8						15.8	32.4		
Actuated g/C Ratio	0.14	0.60			0.41						0.18	0.36		
v/c Ratio	0.55	0.22			0.12						0.64	0.33		
Control Delay	47.2	19.1			13.2						39.4	3.7		
Queue Delay	0.0	0.0			0.0						0.0	0.0		
Total Delay	47.2	19.1			13.2						39.4	3.7		
LOS	D	В			В						D	Α		
Approach Delay		26.2			13.2						25.4			
Approach LOS		С			В						С			
Queue Length 50th (ft)	79	72			8						104	0		
Queue Length 95th (ft)	138	128			41						147	43		
Internal Link Dist (ft)		350			939			442			395			
Turn Bay Length (ft)	250	1000			4407						.70	150		
Base Capacity (vph)	295	1838			1127						670	760		
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	0.46	0.22			0.12						0.56	0.32		
Intersection Summary														
	Other													
Cycle Length: 90														
Actuated Cycle Length: 90 Offset: 0 (0%), Referenced to	phase 2:WB	ITL and 6:	FBT. Start	of Green										
Natural Cycle: 70 Control Type: Actuated-Coord			2 . , O.a.	2.0011										
Maximum v/c Ratio: 0.64	uicu													
Intersection Signal Delay: 24.4	4			In	tersection	LOS: C								
Intersection Capacity Utilization						f Service A	1							
Analysis Period (min) 15					2.0.0									
Splits and Phases: 22: Tom	nahawk Drive		ve & Trans	sportation	Way/Harb	orside Dri		2.6						M _{p4}
			ø2 (R)				- 1	A kø3						Pla

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	
Lane Configurations	*	↑ ↑			413						414	1	
Volume (vph)	124	80	287	1	54	72	0	0	0	72	273	223	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	5.0	5.0			5.0						4.0	5.0	
Lane Util. Factor	1.00	0.95			0.95						0.95	1.00	
Frt	1.00	0.88			0.92						1.00	0.85	
Flt Protected	0.95	1.00			1.00						0.99	1.00	
Satd. Flow (prot)	1770	3002			2775						3352	1583	
Flt Permitted	0.95	1.00			0.95						0.99	1.00	
Satd. Flow (perm)	1770	3002			2645						3352	1583	
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)	135	87	312	1	59	78	0	0	0	78	297	242	
RTOR Reduction (vph)	0	25	0	0	48	0	0	0	0	0	0	166	
Lane Group Flow (vph)	135	374	0	0	90	0	0	0	0	0	375	76	
Heavy Vehicles (%)	2%	21%	2%	2%	18%	20%	0%	0%	0%	24%	2%	2%	
Turn Type	Prot	NA		Perm	NA					Split	NA	pm+ov	
Protected Phases	1	6			2					4	4	1	
Permitted Phases				2								4	
Actuated Green, G (s)	10.6	50.6			33.0						13.8	24.4	
Effective Green, g (s)	12.6	52.6			35.0						15.8	28.4	
Actuated g/C Ratio	0.14	0.58			0.39						0.18	0.32	
Clearance Time (s)	7.0	7.0			7.0						6.0	7.0	
Vehicle Extension (s)	2.0	2.0			2.0						2.0	2.0	
Lane Grp Cap (vph)	247	1754			1028						588	499	
v/s Ratio Prot	c0.08	c0.12			0.00						c0.11	0.02	
v/s Ratio Perm	0.55	0.04			0.03							0.03	
v/c Ratio	0.55	0.21			0.09						0.64	0.15	
Uniform Delay, d1	36.0	8.9			17.4						34.4	22.2	
Progression Factor	1.10	1.87			1.00						1.00	1.00	
Incremental Delay, d2	1.3	0.3			0.2						1.7	0.1	
Delay (s) Level of Service	40.8 D	16.8			17.6 B						36.1 D	22.2 C	
	U	B 22.9			17.6			0.0			30.7	C	
Approach LOS		22.9 C			17.6 B			0.0 A			30.7 C		
Approach LOS		C			В			А			C		
Intersection Summary							<u> </u>						
HCM 2000 Control Delay			26.0	H	CM 2000 L	evel of Se	ervice		С				
HCM 2000 Volume to Capacity	y ratio		0.34	^	61- 11	U (-)			17.0				
Actuated Cycle Length (s)	_		90.0		um of lost	. ,			17.0				
Intersection Capacity Utilizatio	n		41.1%	IC	U Level of	Service			Α				
Analysis Period (min)			15										

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9	
Lane Configurations	LDL	LDI	77	ሻ	<u>₩</u>	WDIC	*	NDI	NDIX	JDL	7	JDIK	ĐZ.			
Volume (vph)	0	0	252	39	68	0	195	0	0	0	98	0				
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12				
Grade (%)		0%			0%			0%			0%					
Storage Length (ft)	0		0	100		0	0		0	0		0				
Storage Lanes	0		2	1		0	1		0	0		0				
Taper Length (ft)	25		.,	25		.,	25		.,	25		.,				
Right Turn on Red		30	Yes		30	Yes		30	Yes		30	Yes				
Link Speed (mph) Link Distance (ft)		344			1001			716			257					
Travel Time (s)		7.8			22.8			16.3			5.8					
Confl. Peds. (#/hr)		7.0			22.0			10.5			5.0					
Confl. Bikes (#/hr)																
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92				
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%				
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%				
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0				
Parking (#/hr)																
Mid-Block Traffic (%)		0%			0%			0%			0%					
Shared Lane Traffic (%)	_	_				_		_	_	_		_				
Lane Group Flow (vph)	0	0	274	42	74	0	212	0	0	0	107	0				
Turn Type			pt+ov	pm+pt	NA		Prot				NA		0	2	0	
Protected Phases			3 9	1	6		3 9				4		2	3	9	
Permitted Phases Detector Phase			2	6 1	6		3				4					
Switch Phase			Z	- 1	0		3				4					
Minimum Initial (s)				6.0	6.0						10.0		6.0	6.0	4.0	
Minimum Split (s)				12.0	12.0						15.5		12.0	11.5	20.0	
Total Split (s)				12.0	29.0						22.0		17.0	19.0	20.0	
Total Split (%)				13.3%	32.2%						24.4%		19%	21%	22%	
Maximum Green (s)				6.0	23.0						16.5		11.0	13.5	17.0	
Yellow Time (s)				3.0	3.0						4.0		3.0	3.0	2.0	
All-Red Time (s)				3.0	3.0						1.5		3.0	2.5	1.0	
Lost Time Adjust (s)				-1.0	-1.0						-1.0					
Total Lost Time (s)				5.0	5.0						4.5					
Lead/Lag				Lead							Lag		Lag	Lead		
Lead-Lag Optimize?																
Vehicle Extension (s)				2.0	2.0						2.0		2.0	2.0	3.0	
Minimum Gap (s)				2.0	2.0						2.0		2.0	2.0	3.0	
Time Before Reduce (s) Time To Reduce (s)				0.0	0.0						0.0		0.0	0.0	0.0	
Recall Mode				None	None						None		None	None	None	
Walk Time (s)				NOTIC	None						None		INOTIC	None	7.0	
Flash Dont Walk (s)															10.0	
Pedestrian Calls (#/hr)															5	
Act Effct Green (s)			23.8	12.7	12.7		14.6				14.6					
Actuated g/C Ratio			0.50	0.27	0.27		0.31				0.31					
v/c Ratio			0.15	0.09	0.21		0.44				0.24					
Control Delay			0.2	18.4	19.9		19.9				22.6					
Queue Delay			0.0	0.0	0.0		0.0				0.0					
Total Delay			0.2	18.4	19.9		19.9				22.6					
LOS			Α	В	B		В				C					
Approach Delay Approach LOS					19.4 B						22.6 C					
Queue Length 50th (ft)			0	10	17		46				23					
Queue Length 95th (ft)			0	38	61		126				88					
Internal Link Dist (ft)		264	U	30	921		120	636			177					
Turn Bay Length (ft)				100	,			300								
Base Capacity (vph)			1879	466	768		703				687					
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			0.15	0.09	0.10		0.30				0.16					
Intersection Summary																
	Other															
Cycle Length: 90	711101															
Actuated Cycle Length: 47.6																
Natural Cycle: 75																
Control Type: Actuated-Uncoor	dinated															
Maximum v/c Ratio: 0.44																
Intersection Signal Delay: 12.6					itersection											
Intersection Capacity Utilization				IC	CU Level of	Service A	4									
Analysis Period (min) 15																
C-19 4.51	D.1	0/5	D. C													
Splits and Phases: 25: Hotel	Drive & SR	:-2/Ramp l	υ-S	-												
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	7 s				20 s					9 s				22 s		
₩ ø6																
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations			77	7	*		75				^		
Volume (vph)	0	0	252	39	68	0	195	0	0	0	98	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)			4.5	5.0	5.0		4.5				4.5		
Lane Util. Factor			0.88	1.00	1.00		1.00				1.00		
Frt			0.85	1.00	1.00		1.00				1.00		
Flt Protected			1.00	0.95	1.00		0.95				1.00		
Satd. Flow (prot)			2493	1752	1357		1583				1473		
Flt Permitted			1.00	0.95	1.00		0.95				1.00		
Satd. Flow (perm)			2493	1752	1357		1583				1473		
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	274	42	74	0	212	0	0	0	107	0	
RTOR Reduction (vph)	0	0	168	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	106	42	74	0	212	0	0	0	107	0	
Heavy Vehicles (%)	14%	14%	14%	3%	40%	3%	14%	14%	14%	29%	29%	29%	
Turn Type			pt+ov	pm+pt	NA		Prot				NA		
Protected Phases			3 9	1	6		3 9				4		
Permitted Phases			2	6									
Actuated Green, G (s)			20.5	15.6	15.6		12.6				7.8		
Effective Green, g (s)			20.5	16.6	16.6		11.6				8.8		
Actuated g/C Ratio			0.39	0.31	0.31		0.22				0.17		
Clearance Time (s)				6.0	6.0						5.5		
Vehicle Extension (s)				2.0	2.0						2.0		
Lane Grp Cap (vph)			964	548	425		346				244		
v/s Ratio Prot			0.02	0.00	c0.05		c0.13				c0.07		
v/s Ratio Perm			0.02	0.02									
v/c Ratio			0.11	0.08	0.17		0.61				0.44		
Uniform Delay, d1			10.4	12.8	13.2		18.7				19.9		
Progression Factor			1.00	1.00	1.00		1.00				1.00		
Incremental Delay, d2			0.0	0.0	0.1		2.3				0.5		
Delay (s)			10.4	12.8	13.3		20.9				20.3		
Level of Service			В	В	В		С				С		
Approach Delay (s)		10.4			13.1			20.9			20.3		
Approach LOS		В			В			С			С		
Intersection Summary													
HCM 2000 Control Delay			15.5	H	CM 2000 L	evel of Se	rvice		В				
HCM 2000 Volume to Capacity	ratio		0.45										
Actuated Cycle Length (s)			53.0		um of lost				22.0				
Intersection Capacity Utilization	1		33.8%	IC	U Level of	Service			Α				
Analysis Period (min)			15										

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	
Lane Configurations		4	7	*		7		∱ ⊅			44			
Volume (vph)	108	22	506	80	0	68	0	20	166	155	234	0		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%			0%			0%			0%			
Storage Length (ft)	0		0	0		0	0		0	0		0		
Storage Lanes	0		1	1		1	0		0	0		0		
Taper Length (ft)	25		Voc	25		Voc	25		Voc	25		Voc		
Right Turn on Red Link Speed (mph)		30	Yes		30	Yes		30	Yes		30	Yes		
Link Distance (ft)		662			390			344			716			
Travel Time (s)		15.0			8.9			7.8			16.3			
Confl. Peds. (#/hr)		13.0			0.7			7.0			10.5			
Confl. Bikes (#/hr)														
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92		
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0		
Parking (#/hr)														
Mid-Block Traffic (%)		0%			0%			0%			0%			
Shared Lane Traffic (%)														
Lane Group Flow (vph)	0	141	550	87	0	74	0	202	0	0	422	0		
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA			
Protected Phases	4	4	4	3		3		1		_	1		2	
Permitted Phases				0		0				1				
Detector Phase	4	4	4	3		3		1		1	1			
Switch Phase Minimum Initial (s)	7.0	7.0	7.0	Γ.0		Γ.0.		7.0		7.0	7.0		1.0	
(-)	7.0 12.0	7.0 12.0	7.0 12.0	5.0 10.0		5.0 10.0		7.0 13.0		7.0 13.0	7.0 13.0		1.0 22.0	
Minimum Split (s) Total Split (s)	17.0	17.0	17.0	17.0		17.0		33.0		33.0	33.0		23.0	
Total Split (%)	18.9%	18.9%	18.9%	18.9%		18.9%		36.7%		36.7%	36.7%		26%	
Maximum Green (s)	12.0	12.0	12.0	12.0		12.0		27.0		27.0	27.0		21.0	
Yellow Time (s)	4.0	4.0	4.0	4.0		4.0		4.0		4.0	4.0		2.0	
All-Red Time (s)	1.0	1.0	1.0	1.0		1.0		2.0		2.0	2.0		0.0	
Lost Time Adjust (s)		-1.0	-1.0	-1.0		-1.0		-2.0			-2.0			
Total Lost Time (s)		4.0	4.0	4.0		4.0		4.0			4.0			
Lead/Lag	Lag	Lag	Lag	Lead		Lead		Lead		Lead	Lead		Lag	
Lead-Lag Optimize?														
Vehicle Extension (s)	2.0	2.0	2.0	2.0		2.0		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		Min		Min	Min		None	
Walk Time (s)													7.0	
Flash Dont Walk (s) Pedestrian Calls (#/hr)													13.0 15	
Act Effet Green (s)		11.6	11.6	9.5		9.5		18.2			18.2		10	
Actuated g/C Ratio		0.22	0.22	0.18		0.18		0.35			0.35			
v/c Ratio		0.22	0.22	0.10		0.10		0.33			0.53			
Control Delay		28.3	10.0	28.4		3.5		4.8			18.4			
Queue Delay		0.0	0.0	0.0		0.0		0.0			0.0			
Total Delay		28.3	10.0	28.4		3.5		4.8			18.4			
LOS		С	А	С		А		A			В			
Approach Delay		13.7						4.8			18.4			
Approach LOS		В						Α			В			
Queue Length 50th (ft)		34	0	22		0		2			46			
Queue Length 95th (ft)		#148	#152	91		13		28			148			
Internal Link Dist (ft)		582			310			264			636			
Turn Bay Length (ft)			640	/00		101		1/0/			1.00			
Base Capacity (vph)		454	819	433		486		1696			1499			
Starvation Cap Reductn		0	0	0		0		0			0			
Spillback Cap Reductn		0	0	0		0		0			0			
Storage Cap Reductn Reduced v/c Ratio		0.21	0.67	0 20		0 15		0 12			0 20			
		0.31	0.67	0.20		0.15		0.12			0.28			
Intersection Summary														

Intersection Summary

Area Type: Other
Cycle Length: 90

Actuated Cycle Length: 51.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73

Intersection Signal Delay: 14.2

Intersection Canacity Lililization 56.7% Intersection Capacity Utilization 56.7% Analysis Period (min) 15

Intersection LOS: B ICU Level of Service B

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



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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		4	1	*		7		↑ ↑			414			
Volume (vph)	108	22	506	80	0	68	0	20	166	155	234	0		
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		4.0			4.0			
Lane Util. Factor		1.00	1.00	1.00		1.00		0.95			0.95			
Frt		1.00	0.85	1.00		0.85		0.87			1.00			
Flt Protected		0.96	1.00	0.95		1.00		1.00			0.98			
Satd. Flow (prot)		1554	1468	1480		1369		2589			3072			
Flt Permitted		0.96	1.00	0.95		1.00		1.00			0.76			
Satd. Flow (perm)		1554	1468	1480		1369		2589			2382			
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)	117	24	550	87	0	74	0	22	180	168	254	0		
RTOR Reduction (vph)	0	0	431	0	0	64	0	119	0	0	0	0		
Lane Group Flow (vph)	0	141	119	87	0	10	0	83	0	0	422	0		
Heavy Vehicles (%)	21%	0%	10%	22%	0%	18%	0%	19%	21%	11%	18%	0%		
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA			
Protected Phases	4	4	4	3		3		1		1 01111	1			
Permitted Phases				J		3				1				
Actuated Green, G (s)		10.4	10.4	6.3		6.3		15.9		•	15.9			
Effective Green, g (s)		11.4	11.4	7.3		7.3		17.9			17.9			
Actuated g/C Ratio		0.22	0.22	0.14		0.14		0.34			0.34			
Clearance Time (s)		5.0	5.0	5.0		5.0		6.0			6.0			
Vehicle Extension (s)		2.0	2.0	2.0		2.0		3.0			3.0			
Lane Grp Cap (vph)		334	316	204		188		876			806			
v/s Ratio Prot		c0.09	0.08	c0.06		0.01		0.03			000			
v/s Ratio Perm		00.07	0.00	00.00		0.01		0.00			c0.18			
v/c Ratio		0.42	0.38	0.43		0.05		0.09			0.52			
Uniform Delay, d1		17.9	17.7	20.9		19.8		12.0			14.1			
Progression Factor		1.00	1.00	1.00		1.00		1.00			1.00			
Incremental Delay, d2		0.3	0.3	0.5		0.0		0.0			0.6			
Delay (s)		18.2	18.0	21.4		19.8		12.0			14.7			
Level of Service		В	В	C		В		В			В			
Approach Delay (s)		18.0		_	20.7	_		12.0			14.7			
Approach LOS		В			C			В			В			
Intersection Summary														
HCM 2000 Control Delay			16.5	HO	CM 2000 L	evel of Se	rvice		В					
HCM 2000 Volume to Capacity ra	atio		0.44											
Actuated Cycle Length (s)			52.9	Su	ım of lost t	time (s)			14.0					
Intersection Capacity Utilization			56.7%		U Level of				В					
Analysis Period (min)			15											

	•	•	4	†	↓	4	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations	¥			†	†		
Volume (vph)	162	33	0	258	256	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%) Storage Length (ft)	0% 0	0	0	0%	0%	0	
Storage Length (ft) Storage Lanes	1	0	0			0	
Taper Length (ft)	25	U	25			U	
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			30	30		
Link Distance (ft)	499			432	331		
Travel Time (s)	11.3			9.8	7.5		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)	0.00	0.00	0.00	0.00	0.00	0.00	
Peak Hour Factor Growth Factor	0.92 100%	0.92 100%	0.92 100%	0.92 100%	0.92	0.92 100%	
Heavy Vehicles (%)	100%	100%	0%	15%	100% 18%	0%	
Bus Blockages (#/hr)	470	0	0%	15%	0	0%	
Parking (#/hr)						- 0	
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	212	0	0	280	278	0	
Turn Type	Prot			NA	NA		
Protected Phases	3			1	1		2
Permitted Phases	_						
Detector Phase	3			1	1		
Switch Phase	0.0			0.0	0.0		4.0
Minimum Initial (s) Minimum Split (s)	8.0 13.0			8.0 13.0	8.0 13.0		4.0 19.0
Total Split (s)	30.0			30.0	30.0		20.0
Total Split (%)	37.5%			37.5%	37.5%		25%
Maximum Green (s)	25.0			25.0	25.0		17.0
Yellow Time (s)	3.0			3.0	3.0		2.0
All-Red Time (s)	2.0			2.0	2.0		1.0
Lost Time Adjust (s)	-1.0			-1.0	-1.0		
Total Lost Time (s)	4.0			4.0	4.0		
Lead/Lag				Lead	Lead		Lag
Lead-Lag Optimize?	2.0			Yes	Yes		Yes
Vehicle Extension (s)	2.0 2.0			2.0 2.0	2.0 2.0		3.0
Minimum Gap (s) 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			C-Max	C-Max		None
Walk Time (s)	.,0110			S .viux	oax		7.0
Flash Dont Walk (s)							9.0
Pedestrian Calls (#/hr)							5
Act Effct Green (s)	14.7			53.5	53.5		
Actuated g/C Ratio	0.18			0.67	0.67		
v/c Ratio	0.65			0.25	0.26		
Control Delay	36.8			8.9	6.3		
Queue Delay	0.0 36.8			0.0 8.9	0.3		
Total Delay LOS	36.8 D			8.9 A	6.6 A		
Approach Delay	36.8			8.9	6.6		
Approach LOS	D			Α	Α		
Queue Length 50th (ft)	92			39	43		
Queue Length 95th (ft)	148			162	113		
Internal Link Dist (ft)	419			352	251		
Turn Bay Length (ft)					407		
Base Capacity (vph)	569			1104	1076		
Starvation Cap Reductn	0			0	350 0		
Spillback Cap Reductn Storage Cap Reductn	0			4	0		
Reduced v/c Ratio	0.37			0.25	0.38		
	0.37			0.20	0.30		
Intersection Summary	Other						
	Other						
Cycle Length: 80 Actuated Cycle Length: 80							
Offset: 79 (99%), Referenced	to phase 1-M	NRSR Sta	art of Green	1			
Natural Cycle: 55	io hijase 1:M	ivdod, Síð	ii oi Greer				
Control Type: Actuated-Coord	linated						
Maximum v/c Ratio: 0.65	matcu						
Intersection Signal Delay: 15.8	8			In	tersection	LOS: B	
Intersection Capacity Utilization						Service A	
Analysis Period (min) 15				,,,			
Splits and Phases: 33: SR-2	2/Frankfort S	Street & Ro	oute 1A NE	B Off-Ram	р		
↓ † _{ø1 (R)}						₩ _{ø2}	
▼ Ø1 (R)						-⊓ a *ø2	

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Movement	EBL	EBR	NBL	NBT	SBT	SBR			
Lane Configurations	¥	LDIN		<u> </u>	<u> </u>	55.1			
Volume (vph)	162	33	0	258	256	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)	4.0	1700	1700	4.0	4.0	1700			
Lane Util. Factor	1.00			1.00	1.00				
Frt	0.98			1.00	1.00				
Flt Protected	0.96			1.00	1.00				
Satd. Flow (prot)	1722			1652	1610				
Flt Permitted	0.96			1.00	1.00				
Satd. Flow (perm)	1722			1652	1610				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			-
Adj. Flow (vph)	176	36	0.72	280	278	0			
RTOR Reduction (vph)	11	0	0	0	0	0			
Lane Group Flow (vph)	201	0	0	280	278	0			
Heavy Vehicles (%)	4%	1%	0%	15%	18%	0%			
Turn Type	Prot			NA	NA				Ī
Protected Phases	3			1	1				
Permitted Phases	,								
Actuated Green, G (s)	13.7			50.1	50.1				
Effective Green, g (s)	14.7			51.1	51.1				
Actuated g/C Ratio	0.18			0.64	0.64				
Clearance Time (s)	5.0			5.0	5.0				
Vehicle Extension (s)	2.0			2.0	2.0				
Lane Grp Cap (vph)	316			1055	1028				į
v/s Ratio Prot	c0.12			0.17	c0.17				
v/s Ratio Perm	00.12			0.17	50.17				
v/c Ratio	0.63			0.27	0.27				
Uniform Delay, d1	30.2			6.3	6.3				
Progression Factor	1.00			1.00	0.68				
Incremental Delay, d2	3.1			0.6	0.6				
Delay (s)	33.2			6.9	5.0				
Level of Service	C			Α.	Α				
Approach Delay (s)	33.2			6.9	5.0				
Approach LOS	C			Α.	Α				
				,,	,,				
Intersection Summary									
HCM 2000 Control Delay			13.4	H	CM 2000 L	evel of Service	В		
HCM 2000 Volume to Capaci	ity ratio		0.34						
Actuated Cycle Length (s)			80.0		ım of lost t		11.0		
Intersection Capacity Utilizati	on		31.2%	IC	U Level of	Service	A		
Analysis Period (min)			15						

	/	٣	×	/	6	×
Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations	*	7	1>			4
Volume (vph)	181	34	223	70	25	264
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	200		0	0	
Storage Lanes	1	1		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	30		30			30
Link Distance (ft)	392		941			432
Travel Time (s)	8.9		21.4			9.8
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	32%	36%	18%	5%	38%	12%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	197	37	318	0	0	314
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type: Unsignalized						
Intersection Capacity Utilizat	ion 51.3%			IC	:U Level o	f Service A
Analysis Period (min) 15						

wement WBL WBR NET NER SWL SWT the Configurations T T T T T T T T T T T T T T T T T T T
te Configurations 1
ume (veh/h) 181 34 223 70 25 264 n Control Stop Free Free ide 0% 0% 0% ide Hour Factor 0.92 0.92 0.92 0.92 0.92 ide Hour Factor 197 37 242 76 27 287 idestrians 37 38 38 38 38 38 38 38 38 38 38 38 38 37 38
n Control Stop Free Free de 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 092 0.92 0.92 0.92 0.92 0.92 0.92 0.92
ide 0% 0% 0% ik Hour Factor 0.92 0.92 0.92 0.92 0.92 irly flow rate (vph) 197 37 242 76 27 287 lestrians
ak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 urly flow rate (vph) 197 37 242 76 27 287 destrians
urly flow rate (vph) 197 37 242 76 27 287 destrians
destrians
Iking Speed (ft/s)
cent Blockage
ht turn flare (veh) 8
dian type None None
dian storage veh)
stream signal (ft) 432
platoon unblocked 0.95
conflicting volume 622 280 318
I, stage 1 conf vol
r, stage 7 confi vol
ı, unblocked vol 574 280 318
single (s) 6.7 6.6 4.5
2 stage (s)
s) 3.8 3.6 2.5
queue free % 51 95 97
capacity (veh/h) 401 684 1064
ection, Lane # WB 1 NE 1 SW 1
ume Total 234 318 314
ume Left 197 0 27
ume Right 37 76 0
476 1700 1064
ume to Capacity 0.49 0.19 0.03
eue Length 95th (ft) 66 0 2
ntrol Delay (s) 20.5 0.0 1.0
e LOS C A
oroach Delay (s) 20.5 0.0 1.0
oroach LOS C
rsection Summary
erage Delay 5.9
ersection Capacity Utilization 51.3% ICU Level of Service A
alysis Period (min) 15

	٠	•	•	†	+	4
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	ሻሻ	LDIN	IVDL	41	↑ ↑	JUIN
Volume (vph)	56	7	1	61	37	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0% 0	0	0	0%	0%	0
Storage Length (ft) Storage Lanes	2	0	0			0
Taper Length (ft)	25	U	25			U
Right Turn on Red		Yes				Yes
Link Speed (mph)	30			30	30	
Link Distance (ft)	361			895	973	
Travel Time (s)	8.2			20.3	22.1	
Confl. Peds. (#/hr) Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)	00/			00/	00/	
Mid-Block Traffic (%) Shared Lane Traffic (%)	0%			0%	0%	
Lane Group Flow (vph)	69	0	0	67	80	0
Turn Type	Prot	- 0	Perm	NA	NA	
Protected Phases	4			6	2	
Permitted Phases			6			
Detector Phase	4		6	6	2	
Switch Phase Minimum Initial (s)	15.0		4.0	4.0	6.0	
Minimum Initial (s) Minimum Split (s)	15.0 20.0		6.0 11.0	6.0 11.0	6.0 20.0	
Total Split (s)	45.0		22.0	22.0	22.0	
Total Split (%)	67.2%		32.8%	32.8%	32.8%	
Maximum Green (s)	40.0		17.0	17.0	17.0	
Yellow Time (s)	3.0		3.0	3.0	3.0	
All-Red Time (s) Lost Time Adjust (s)	2.0 -1.0		2.0	2.0 -1.0	2.0 -1.0	
Total Lost Time (s)	4.0			4.0	4.0	
Lead/Lag	1.0			0	0	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		2.0	2.0	2.0	
Minimum Gap (s)	3.0		2.0	2.0	2.0	
Time Before Reduce (s) Time To Reduce (s)	0.0		0.0	0.0	0.0	
Recall Mode	None		None	None	None	
Walk Time (s)	5.0				5.0	
Flash Dont Walk (s)	10.0				10.0	
Pedestrian Calls (#/hr)	5			0.4	5	
Act Effct Green (s) Actuated g/C Ratio	17.4 0.84			9.1 0.44	9.1 0.44	
v/c Ratio	0.02			0.44	0.44	
Control Delay	3.3			4.6	3.2	
Queue Delay	0.0			0.0	0.0	
Total Delay	3.3			4.6	3.2	
LOS	A			A	A	
Approach LOS	3.3			4.6	3.2	
Approach LOS Queue Length 50th (ft)	A 0			A 0	A 1	
Queue Length 95th (ft)	11			12	11	
Internal Link Dist (ft)	281			815	893	
Turn Bay Length (ft)						
Base Capacity (vph)	3403			2989	2918	
Starvation Cap Reductn	0			0	0	
Spillback Cap Reductn Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.02			0.02	0.03	
	0.02			0.02	0.03	
Intersection Summary	Others					
Area Type: Cycle Length: 67	Other					
Actuated Cycle Length: 20.8	1					
Natural Cycle: 40	<i>'</i>					
Control Type: Actuated-Unc	oordinated					
Maximum v/c Ratio: 0.06						
Intersection Signal Delay: 3.					tersection	
Intersection Capacity Utiliza Analysis Period (min) 15	tion 24.2%			IC	U Level of	Service A
mialysis relidu (IIIII) 15						
Splits and Phases: 86: Ha	arborside Drive	. & Hyatt Г	Orive			
					1	
▼ ø2 22 s					ø4 45 s	
-A					10.5	
↑ ø6						
22 S						

Movement
Volume (vph) 56 7 1 61 37 37 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Total Lost time (s) 4.0 4.0 4.0 4.0 Lane Util. Factor 0.97 0.95 0.95 0.95 Fit 0.98 1.00 0.93 1.00 Satd. Flow (port) 3401 3537 3274 Fit Permitted 0.96 0.95 1.00 Satd. Flow (perm) 3401 3359 3274 Fleek-hour factor, PHF 0.92 0.92 0.92 0.92 0.92 Adj. Flow (perm) 3401 3359 3274
Volume (vph) 56 7 1 61 37 37 Ideal Flow (vphpl) 1900
Total Lost lime (s)
Lane Util. Factor 0.97 0.95 0.95 Fit 0.98 1.00 0.93 Fit Protected 0.96 1.00 1.00 Satd. Flow (prot) 3401 3537 3274 Fit Permitted 0.96 0.95 1.00 Satd. Flow (perm) 3401 3359 3274 Peak-hour factor, PHF 0.92 0.92 0.92 0.92 0.92 Adj. Flow (yph) 61 8 1 66 40 40 RTOR Reduction (yph) 7 0 0 0 0 28 0 Lane Group Flow (yph) 62 0 0 67 52 0 Turn Type Prot Perm NA NA Protected Phases 4 6 2 Permitted Phases 6 Actuated Green, G (s) 1.6 3.3 3.3 Effective Green, g (s) 2.6 4.3 4.3 Actuated g/C Ratio 0.17 0.29 0.29 Clearance Time (s) 5.0 5.0 Vehicle Extension (s) 3.0 2.0 2.0 Lane Grp Cap (yph) 593 969 944 v/s Ratio Prot 0.02 v/s Ratio Port 0.01 0.05 Uniform Delay, d1 5.2 3.8 3.8 Progression Factor 1.00 1.00 Incremental Delay, d2 0.1 0.0 0.0 Delay (s) 5.3 3.9 3.8 Level of Service A A A A Approach LOS A
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Protected Phases 4 6 2 Permitted Phases 6 A Actuated Green, G (s) 1.6 3.3 3.3 Effective Green, g (s) 2.6 4.3 4.3 Actuated g/C Ratio 0.17 0.29 0.29 Clearance Time (s) 5.0 5.0 5.0 Vehicle Extension (s) 3.0 2.0 2.0 Lane Grp Cap (vph) 593 969 944 v/s Ratio Prot c0.02 0.02 v/s Ratio Perm c0.02 0.02 v/s Ratio Perm c0.02 0.05 Uniform Delay, d1 5.2 3.8 3.8 Progression Factor 1.00 1.00 1.00 Incremental Delay, d2 0.1 0.0 0.0 Delay (s) 5.3 3.9 3.8 Level of Service A A A A pproach Delay (s) 5.3 3.9 3.8 Approach LOS A A A
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Approach Delay (s) 5.3 3.9 3.8 Approach LOS A A A
Approach LOS A A A
Intersection Summary
HCM 2000 Control Delay 4.3 HCM 2000 Level of Service A
HCM 2000 Volume to Capacity ratio 0.08
Actuated Cycle Length (s) 14.9 Sum of lost time (s) 8.0
Intersection Capacity Utilization 24.2% ICU Level of Service A
Analysis Period (min) 15
c Critical Lane Group

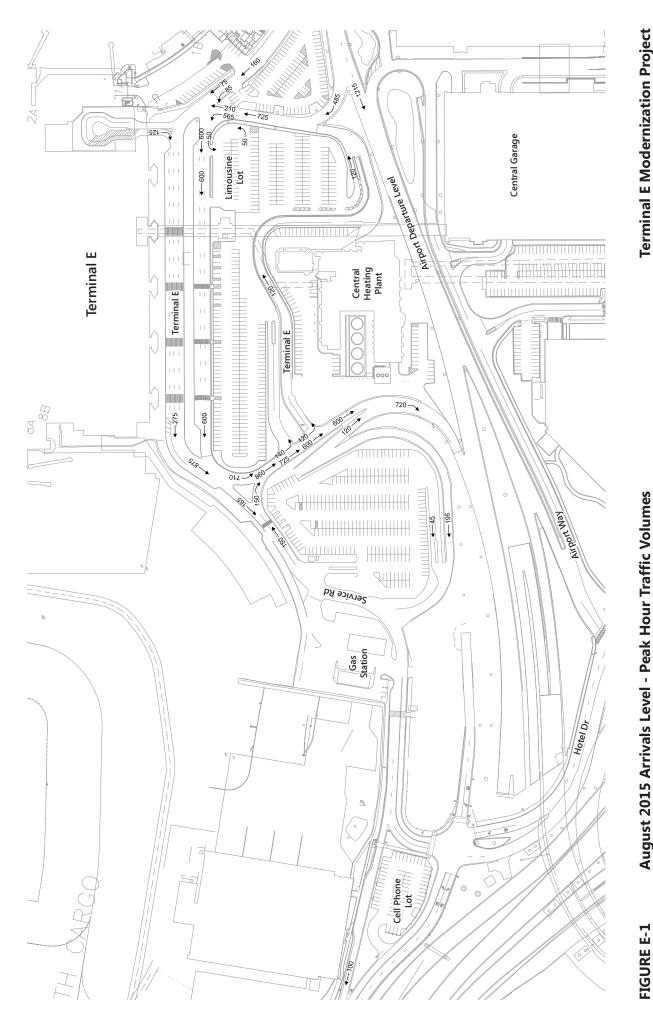
	•	•	†	/	-	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥		1>			414
Volume (vph)	124	7	138	125	7	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Link Speed (mph)	30		30			30
Link Distance (ft)	78		344			228
Travel Time (s)	1.8		7.8			5.2
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Shared Lane Traffic (%)						
Lane Group Flow (vph)	143	0	286	0	0	205
Sign Control	Stop		Free			Free
Intersection Summary						
	Other					
Control Type: Unsignalized						
Intersection Capacity Utilization	on 28.9%			IC	U Level o	f Service A
Analysis Period (min) 15						

	•	•	†	~	\	ļ
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	¥/		1>			44
Volume (veh/h)	124	7	138	125	7	181
Sign Control	Stop	•	Free	120	•	Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	135	8	150	136	8	197
Pedestrians	100	Ū	100	100	Ü	
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		N	Vone
Median storage veh)			None			VOLIC
Upstream signal (ft)			344			
pX, platoon unblocked			577			
vC, conflicting volume	332	218			286	
vC1, stage 1 conf vol	002	210			200	
vC2, stage 2 conf vol						
vCu, unblocked vol	332	218			286	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)	0.0	0.7			11.1	
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	99			99	
cM capacity (veh/h)	634	786			1273	
					1273	
	WB 1	NB 1	SB 1	SB 2		
Volume Total	142	286	73	131		
Volume Left	135	0	8	0		
Volume Right	8	136	0	0		
cSH	641	1700	1273	1700		
Volume to Capacity	0.22	0.17	0.01	0.08		
Queue Length 95th (ft)	21	0	0	0		
Control Delay (s)	12.2	0.0	0.9	0.0		
Lane LOS	В		Α			
Approach Delay (s)	12.2	0.0	0.3			
Approach LOS	В					
Intersection Summary						
Average Delay			2.8			
			28.9%	ICI	U Level of Se	rvice
Intersection Capacity Utilization						
Intersection Capacity Utilization Analysis Period (min)			15	100	o Level of Se	JI VICC

Surface Transportation Figures

- Figure E-1: August 2015 Arrivals Level Peak Hour Traffic Volumes
- Figure E-2: August 2015 Departures Level Peak Hour Traffic Volumes
- Figure E-3: 2015 Evening Peak Hour Traffic Volumes
- Figure E-4: 2015 Sunday Peak Hour Traffic Volumes
- Figure E-5: No-Action Alternative (Existing Parking Freeze Remains) Evening Peak Hour Traffic Volumes
- Figure E-6: No-Action Alternative (Existing Parking Freeze Remains) Sunday Peak Hour Traffic Volumes
- Figure E-7: Proposed Action (Existing Parking Freeze Remains) Evening Peak Hour Traffic Volumes
- Figure E-8: Proposed Action (Existing Parking Freeze Remains) Sunday Peak Hour Traffic Volumes
- Figure E-9: No-Action Alternative (Existing Parking Freeze Remains) Arrivals Level Peak Hour Traffic Volumes
- Figure E-10: No-Action Alternative (Existing Parking Freeze Remains) Departures Level Peak Hour Traffic Volumes
- Figure E-11: Proposed Action (Existing Parking Freeze Remains) Arrivals Level Peak Hour Traffic Volumes
- Figure E-12: Proposed Action (Existing Parking Freeze Remains) Departures Level Peak Hour Traffic Volumes
- Figure E-13: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Evening Peak Hour Traffic Volumes
- Figure E-14: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Sunday Peak Hour Traffic Volumes
- Figure E-15: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Arrivals Level Peak Hour Traffic Volumes
- Figure E-16: Proposed Action (Additional 5,000 On-Airport Parking Spaces) Departure Level Peak Hour Traffic Volumes

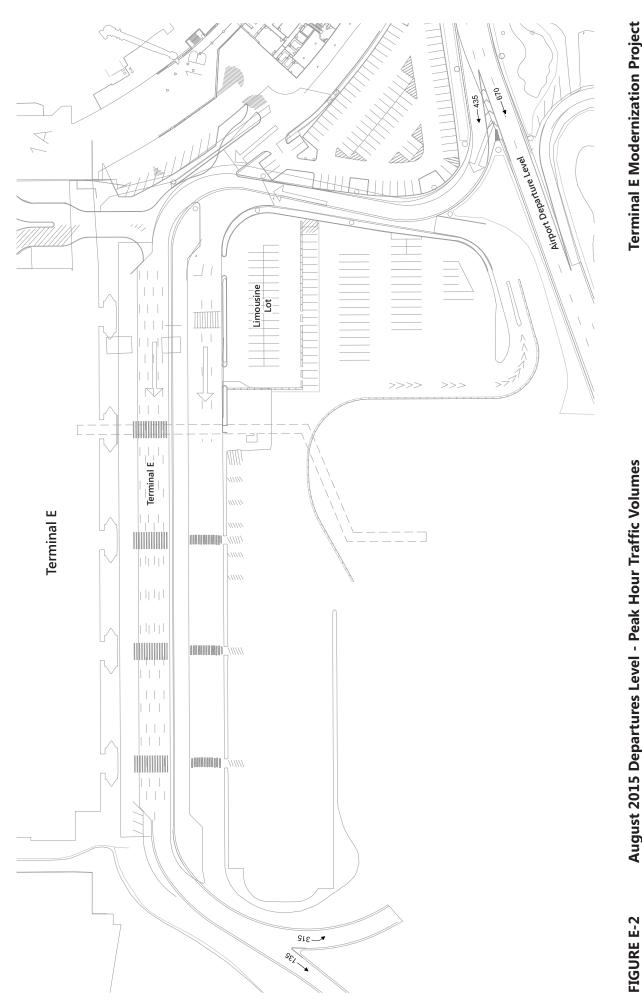
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Terminal E Modernization Project

240 Feet

August 2015 Arrivals Level - Peak Hour Traffic Volumes



Terminal E Modernization Project

160 Feet

0 40 80

August 2015 Departures Level - Peak Hour Traffic Volumes

E-381

NOT TO SCALE

Terminal E Modernization Project

2015 Evening - Peak Hour Traffic Volumes

FIGURE E-3

E-382

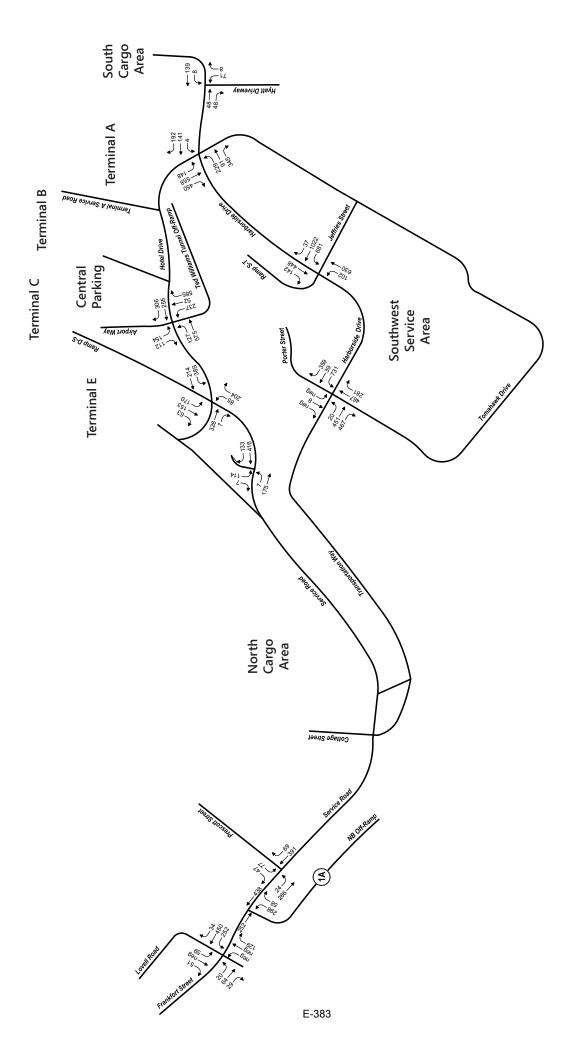


Terminal E Modernization Project

2015 Sunday - Peak Hour Traffic Volumes

FIGURE E-4

Terminal E Modernization Project



No-Action (Existing Parking Freeze Remains) - Evening Peak Hour Traffic Volumes

FIGURE E-5

E-384

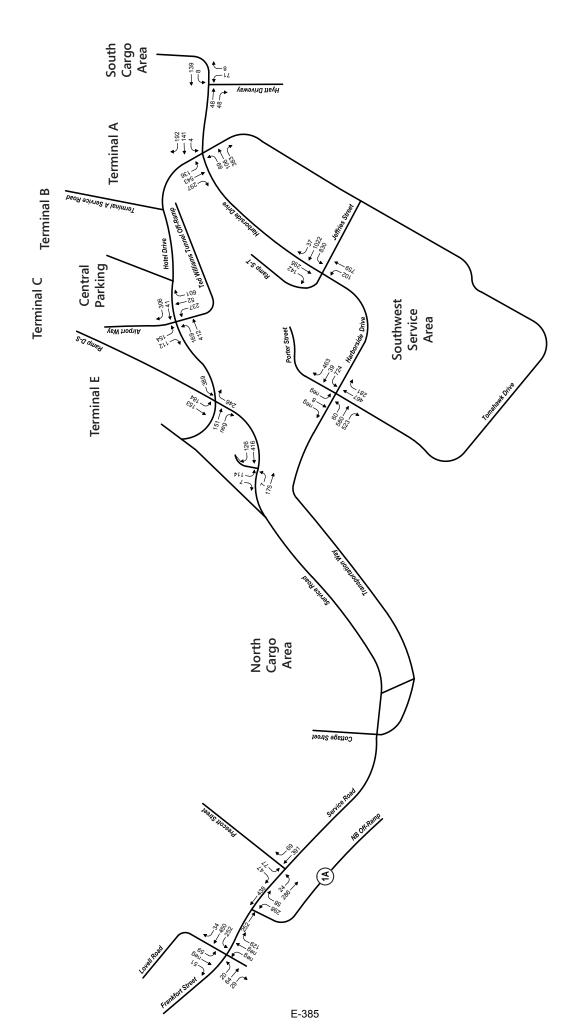
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NOT TO SCALE

Terminal E Modernization Project

No-Action (Existing Parking Freeze Remains) - Sunday Peak Hour Traffic Volumes

FIGURE E-6 No



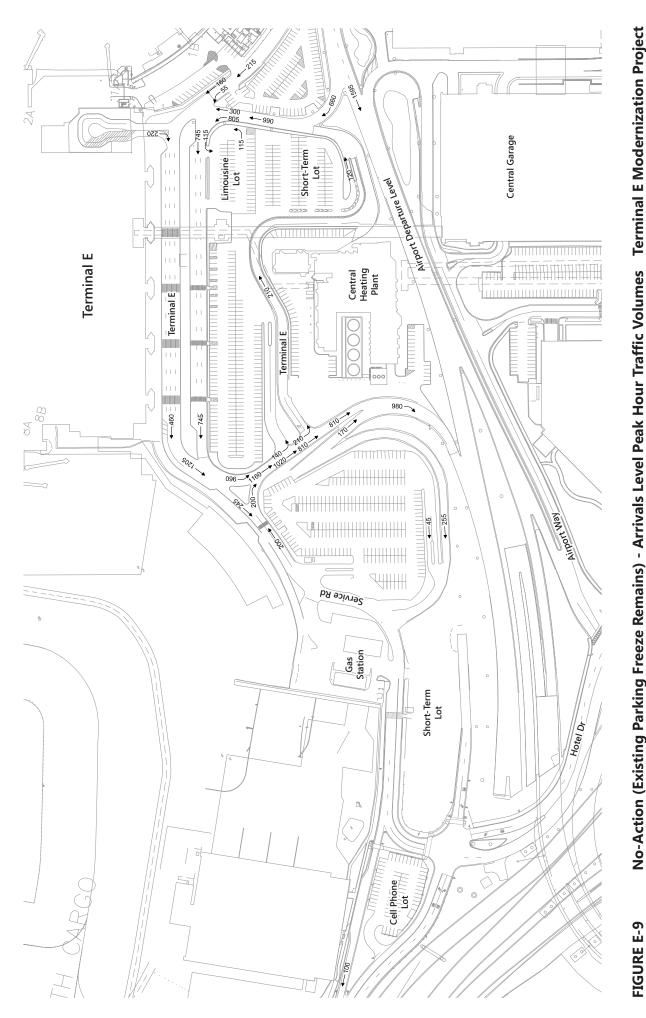
Proposed Action (Existing Parking Freeze Remains) - Evening Peak Hour Traffic Volumes Terminal E Modernization Project

FIGURE E-7

E-386

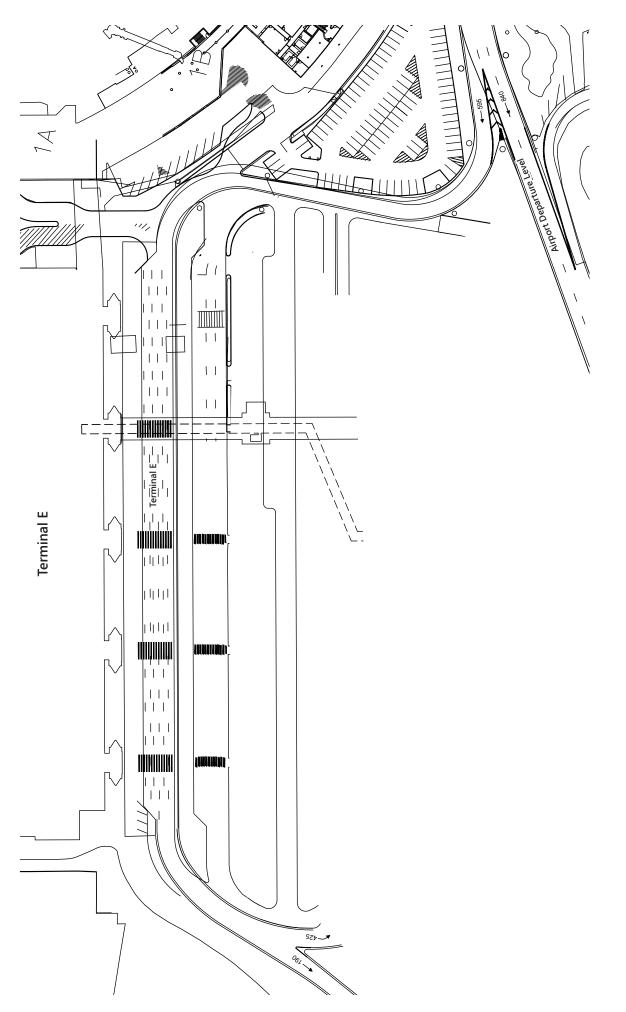
Proposed Action (Existing Parking Freeze Remains) - Sunday Peak Hour Traffic Volumes Terminal E Modernization Project





No-Action (Existing Parking Freeze Remains) - Arrivals Level Peak Hour Traffic Volumes Terminal E Modernization Project





No-Action (Existing Parking Freeze Remains) - Departures Level Peak Hour Traffic Volumes Terminal E Modernization Project **FIGURE E-10**



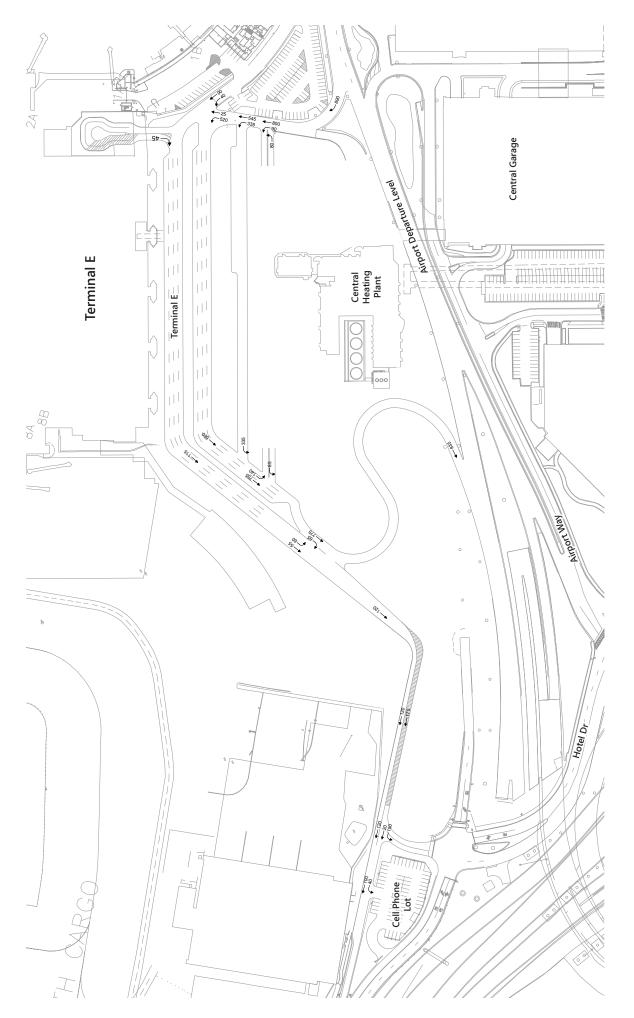


FIGURE E-11 Proposed Action (Existing Parking Freeze Remains) - Arrivals Level Peak Hour Traffic Volumes Terminal E Modernization Project



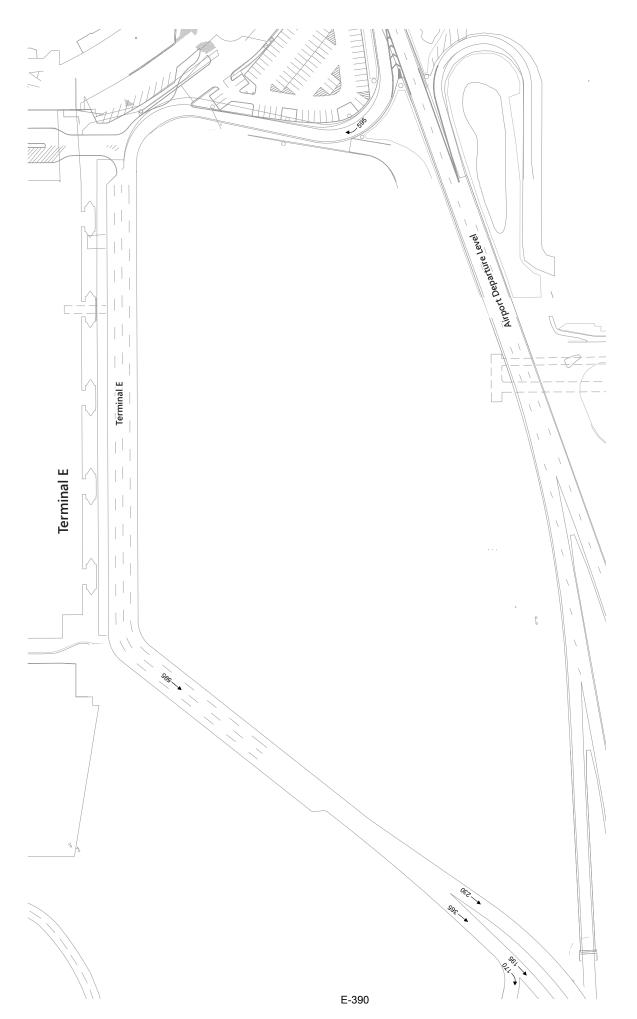


FIGURE E-12 Proposed Action (Existing Parking Freeze Remains) - Departures Level Peak Hour Traffic Volumes Terminal E Modernization Project

160 Feet

FIGURE E-13 Proposed Action (Additional 5,000 On-Airport Parking Spaces) - Evening Peak Hour Traffic Volumes Terminal E Modernization Project



FIGURE E-14 Proposed Action (Additional 5,000 On-Airport Parking Spaces) - Sunday Peak Hour Traffic Volumes Terminal E Modernization Project



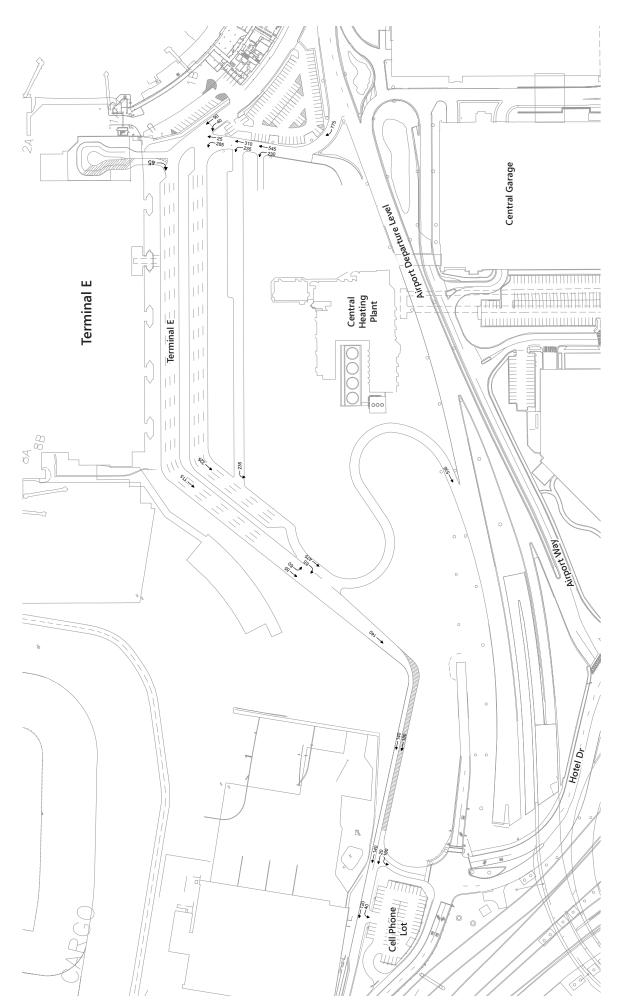


FIGURE E-15 Proposed Action (Additional 5,000 On-Airport Parking Spaces) - Arrivals Level Peak Hour Traffic Volumes Terminal E Modernization Project



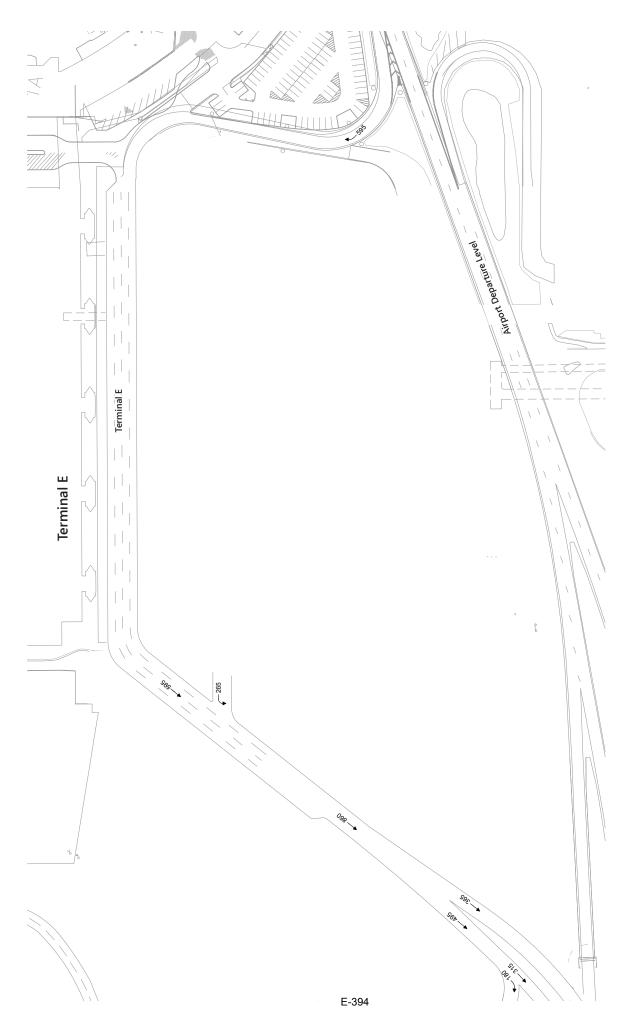


FIGURE E-16 Proposed Action (Additional 5,000 On-Airport Parking Spaces) - Departures Level Peak Hour Traffic Volumes Terminal E Modernization Project

160 Feet

Appendix F Air Quality Technical Appendix

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Appendix F Air Quality Technical Appendix

This appendix provides detailed information and data tables in support of Chapter 4, *Affected Environment* and Chapter 5, *Environmental Consequences*.

The Terminal E Modernization Project (the Proposed Action or Project) would not result in any changes to the number and type of aircraft operations that will occur at Logan Airport in the future. However, the Proposed Action would improve how Terminal E and the North Apron operate. The air quality assessment evaluates the effects of these changes on air emissions and the technical data used and/or developed in support of this analysis are contained in this appendix.

Airside Modeling Assumptions

Aircraft taxi-time was based on the round-trip distance from the project boundary to a gate or hardstand and a taxi speed of 10 knots. It was assumed that under the No-Action Alternative that there would be 2.5 minutes of additional taxi-delay time when compared to the Proposed Action based on the average delay time in 2015 and scaled to account for additional aircraft in the future. The result was a taxi-time of 5.78 minutes for the No-Action Alternative and 4.65 minutes for the Proposed Action.

Aircraft auxiliary power unit usage was calculated based on whether an aircraft utilized a gate or a hardstand. The type of aircraft also affected auxiliary power unit usage at hardstands. Based on observations, aircraft that utilized a gate had an auxiliary power unit usage time of five minutes upon departure. For aircraft that utilized hardstands, the auxiliary power unit usage per landing-and-takeoff operation was based on the minimum time allowed for servicing at a gate, which for the A380 aircraft, wide-body aircraft, and narrow-body aircraft was 180 minutes, 150 minutes, and 120 minutes, respectively. From observations, the auxiliary power unit usage per landing-and-takeoff operation for cargo aircraft and commuter aircraft was 60 minutes and 45 minutes, respectively. It was assumed that aircraft relocation between the gates and hardstands would accrue additional auxiliary power unit and aircraft tractor usage with usage time based on the distance between the gates and hardstands.

Aircraft that utilize hardstands instead of gates have passengers bussed to or from the terminal. Based on observations, the number of average busing trips per day was 33 under the No-Action Alternative. This resulted in a daily busing vehicle miles traveled of approximately 90 miles and a daily idle time of approximately 44 hours. The number of busing trips per day was estimated at three under the Proposed Action. This resulted in a decrease in daily busing vehicle miles traveled to approximately 2.5 miles and a daily idle time of approximately 1.5 hours.



With the Proposed Action, the UPS cargo operations would be relocated to the South Cargo Area, outside of the Terminal E and North Apron area. However, since these operations, and associated emissions, would still occur on the Airport, the cargo operations were included in the Proposed Action.

Aircraft Fleet and Operational Data used in AEDT Version 2b

The Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT) is the FAA-required model for conducting airport air quality analyses. The most recent version of AEDT, Version 2b (AEDT 2b), was used in support of the air quality analysis.

Table F-1 contains the data that were used in AEDT 2b to represent existing conditions at Logan Airport in 2015. These data include aircraft type, engine, landing and takeoff cycles, and taxi times. The aircraft consisted of three categories: air carrier, cargo, and commuter. The data used to represent the No-Action and Proposed Action Alternatives are contained in **Table F-2** and **Table F-3**, respectively.

Table F-1 Existing (2015) Fleet Mix, Annual Landing-and-Takeoff Cycles (LTOs), and Taxi/Delay Time-in-Mode by Aircraft Type

Aircraft Type	Engine	LTOs	Taxi Time
Airbus A300F4-600 Series	PW4158	730	2.36
Airbus A320-200 Series	V2527-A5	3,103	2.36
Airbus A321-200 Series	V2533-A5	913	2.36
Airbus A330-300 Series	CF6-80E1A4	3,468	2.36
Airbus A340-600 Series	Trent 556-61	365	2.36
Boeing 737-800 Series	CFM56-7B26	2,008	2.36
Boeing 747-400 Series	RB211-524H	1,825	2.36
Boeing 757-200 Series	RB211-535E4	2,373	2.36
Boeing 757-200 Series Freighter	RB211-535E4	730	2.36
Boeing 767-300 ER Freighter	CF6-80C2B7F	365	2.36
Boeing 767-400 ER	CF6-80C2B8F	2,008	2.36
Boeing 777-300 ER	GE90-115B	913	2.36
Boeing 787-8	GEnx-1B64	913	2.36
Bombardier de Havilland Dash 8 Q400	PW150A	2,920	2.36

Source: KBE and Massport.

Notes: Due to rounding of the operations (1 LTO = 2 Operations) there may be some differences (+/-) between the values reported here and those reported elsewhere in this report.

Table F-2 No-Action Alternative (2030) Fleet Mix, Annual Landing-and-Takeoff Cycles (LTOs), and Taxi/Delay Time-in-Mode by Aircraft Type

Aircraft Type	Engine	LTOs	Taxi Time
Airbus A300F4-600 Series	PW4158	730	5.78
Airbus A319-100 Series	CFM56-5B6/2	183	5.78
Airbus A320-200 Series	V2527-A5	2,190	5.78
Airbus A321-200 Series	V2533-A5	730	5.78
Airbus A330-300 Series	CF6-80E1A4	5,840	5.78



Table F-2 No-Action Alternative (2030) Fleet Mix, Annual Landing-and-Takeoff Cycles (LTOs), and Taxi/Delay Time-in-Mode by Aircraft Type

Airbus A350-900 Series	Trent 772	365	5.78
Airdus A350-900 Series	rent 772	365	5.78
Airbus A380-800 Series	Trent 970-84	1,460	5.78
Boeing 737-800 Series	CFM56-7B26	3,468	5.78
Boeing 747-8	GEnx-2B67	730	5.78
Boeing 757-200 Series	RB211-535E4	1,460	5.78
Boeing 757-200 Series Freighter	RB211-535E4	365	5.78
Boeing 767-300 ER Freighter	CF6-80C2B7F	365	5.78
Boeing 777-300 ER	GE90-115B	3,468	5.78
Boeing 787-8	GEnx-1B64	1,460	5.78
Boeing 787-9	Trent 1000-J2	1,825	5.78
Bombardier de Havilland Dash 8 Q400	PW150A	2,920	5.78

Source: KBE and Massport

Notes: Due to rounding of the operations (1 LTO = 2 Operations) there may be some differences (+/-) between the values reported here and those reported elsewhere in this report.

Table F-3 Action Alternative (2030) Fleet Mix, Annual Landing-and-Takeoff Cycles (LTOs), and Taxi/Delay Time-in-Mode by Aircraft Type

Aircraft Type	Engine	LT0s	Taxi Time
Airbus A300F4-600 Series	PW4158	730	5.78
Airbus A319-100 Series	CFM56-5B6/2	183	4.65
Airbus A320-200 Series	V2527-A5	2,190	4.65
Airbus A321-200 Series	V2533-A5	730	4.65
Airbus A330-300 Series	CF6-80E1A4	5,840	4.65
Airbus A350-900 Series	Trent 772	365	4.65
Airbus A380-800 Series	Trent 970-84	1,460	4.65
Boeing 737-800 Series	CFM56-7B26	3,468	4.65
Boeing 747-8	GEnx-2B67	730	4.65
Boeing 757-200 Series	RB211-535E4	1,460	4.65
Boeing 757-200 Series Freighter	RB211-535E4	365	5.78
Boeing 767-300 ER Freighter	CF6-80C2B7F	365	5.78
Boeing 777-300 ER	GE90-115B	3,468	4.65
Boeing 787-8	GEnx-1B64	1,460	4.65
Boeing 787-9	Trent 1000-J2	1,825	4.65
Bombardier de Havilland Dash 8 Q400	PW150A	2,920	4.65

Source: KBE and Massport

Notes: Due to rounding of the operations (1 LTO = 2 Operations) there may be some differences (+/-) between the values reported here and those reported elsewhere in this report.



Motor Vehicle, Aircraft, and Ground Support Equipment/Auxiliary Power Unit Emissions

Motor vehicle emission factors were obtained from the U.S. Environmental Protection Agency's (EPA's) Motor Vehicle Emission Simulator, Version 2014a (MOVES2014a). The resultant emission factors were multiplied by average daily vehicle miles to calculate annual emissions. The on-Airport traffic data are summarized in the vehicle miles traveled analyses of Appendix E, *Surface Transportation Technical Appendix*. Further, MOVES2014a was used to obtain vehicle emissions at idle to estimate parking and curbside motor vehicle emissions. Idling emissions are determined for a unit of time and multiplied by total idling time to reach the associated emissions. Sample input and output files of MOVES2014a are included as **Tables F-4** and **F-5**.

Aircraft and ground support equipment/ auxiliary power unit emissions were obtained from the FAA's AEDT 2b. Required inputs for AEDT 2b include the aircraft fleet and engine types, number of landing-and-takeoff operations, taxi time, ground support equipment fleet mix, and ground support equipment and auxiliary power unit time-in-mode. Sample input and output files of AEDT 2b are included as **Tables F-6** and **Table F-7**.



Table F-4 MOVES2014a Sample Input File

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Source: KBE and Massport.



Table	able F-5 MOVES2014a Sample Output File																
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emissiona	activity	activitver	nissio	nmas	ssUnit	tdist	ancel	Units									
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1,1,2015	1	1 201			5	7			250250	22	117NULL	21	0	0	0	0	00.001537 1 10.001537g mi
1,1,2015	1	1 201) :	1	5	7	25	25025	250250	22	116NULL	21	0	0	0	0	00.003692 1 10.003692g mi



1,1,2015	1	1	2015	1	5	7	25	25025	250250	22	115NULL	21	0	0	0	0	00.000372	1 10.000372g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	112NULL	21	0	0	0	0	00.001679	1 10.001679g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	111NULL	21	0	0	0	0	00.006703	1 10.006703g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	110NULL	21	0	0	0	0	00.011534	1 10.011534g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	107NULL	21	0	0	0	0	00.010247	1 10.010247g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	106NULL	21	0	0	0	0	00.029535	1 10.029535g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	100NULL	21	0	0	0	0	00.013038	1 10.013038g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	91NULL	21	0	0	0	0		1 10.013038g mi
			2015		5	7	25						0			0		
1,1,2015	1	1		1					250250	22	90NULL	21		0	0			1 1 318.805g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	87NULL	21	0	0	0	0		1 10.086427g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	79NULL	21	0	0	0	0		1 10.081729g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	66NULL	21	0	0	0	0	0 2.3E-05	9
1,1,2015	1	1	2015	1	5	7	25		250250	22	59NULL	21	0	0	0	0		1 1 0.00022g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	58NULL	21	0	0	0	0	0 3.9E-05	L 1 3.9E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	22	57NULL	21	0	0	0	0	03.91E-05	1 13.91E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	22	56NULL	21	0	0	0	0	0 4.1E-06	L 1 4.1E-06g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	22	55NULL	21	0	0	0	0	00.000174	1 10.000174g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	22	54NULL	21	0	0	0	0	01.74E-05	1 11.74E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	22	53NULL	21	0	0	0	0	01.02E-05	1 11.02E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	52NULL	21	0	0	0	0	0 4.8E-06	5
1,1,2015	1	1	2015	1	5	7	25		250250	22	51NULL	21	0	0	0	0		1 11.26E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	36NULL	21	0	0	0	0		1 10.000334g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	35NULL	21	0	0	0	0		1 13.48E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	31NULL	21	0	0	0	0		1 10.006327g mi
		1	2015			7	25		250250	22			0	0	0	0		3
1,1,2015	1	1		1	5	7				22	5NULL	21		0		0		9
1,1,2015	1		2015	1	5		25		250250		3NULL	21	0		0			1 10.231314g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	2NULL	21	0	0	0	0		1 11.649025g mi
1,1,2015	1	1	2015	1	5	7	25		250250	22	1NULL	21	0	0	0	0		1 10.084254g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	122NULL	42	0	0	0	0	00.010268	10.8496980.012085g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	121NULL	42	0	0	0	0	00.003798	10.8496980.004469g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	119NULL	42	0	0	0	0		.849698 0g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	118NULL	42	0	0	0	0	00.077746	10.8496980.091499g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	117NULL	42	0	0	0	0	00.002814	10.8496980.003312g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	116NULL	42	0	0	0	0	00.020932	10.8496980.024635g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	115NULL	42	0	0	0	0	00.007048	10.8496980.008295g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	112NULL	42	0	0	0	0	0 0.10499	10.8496980.123562g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	111NULL	42	0	0	0	0	00.051342	10.8496980.060423g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	110NULL	42	0	0	0	0	00.182737	10.8496980.215061g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	107NULL	42	0	0	0	0	00.018761	10.849698 0.02208g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	106NULL	42	0	0	0	0	00.167459	10.8496980.197081g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	100NULL	42	0	0	0	0	00.198627	-
		1	2015		5	7	25						0		0	0		5
1,1,2015	1			1					250250	21	91NULL	42		0			00.012149	10.8496980.014298g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	90NULL	42	0	0	0	0		0.8496981111.183g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	87NULL	42	0	0	0	0	00.504068	10.8496980.593232g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	79NULL	42	0	0	0	0	00.447389	10.8496980.526527g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	66NULL	42	0	0	0	0		10.8496989.22E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	59NULL	42	0	0	0	0	00.000477	10.8496980.000561g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	58NULL	42	0	0	0	0	00.000208	10.8496980.000245g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	57NULL	42	0	0	0	0	00.000759	10.8496980.000894g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	56NULL	42	0	0	0	0	03.08E-05	10.8496983.63E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	55NULL	42	0	0	0	0	00.001224	10.8496980.001441g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	54NULL	42	0	0	0	0	04.73E-05	10.8496985.57E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	53NULL	42	0	0	0	0		10.8496988.22E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	52NULL	42	0	0	0	0	00.000176	10.8496980.000207g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	51NULL	42	0	0	0	0	00.000443	10.8496980.000522g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	36NULL	42	0	0	0	0	00.001234	10.8496980.001452g mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	35NULL	42	0	0	0	0	00.000621	10.8496980.000731g mi
1,1,2015	1	1	2015	1	5	7			250250	21	31NULL	42	0	0	0	0	00.008199	10.8496980.009649q mi
1,1,2015	1	1	2015	1	5	7	25		250250	21	5NULL	42	0	0	0	0		10.8496980.027641g mi
1,1,2015		1	2015		5	7	25		250250	21	3NULL		0	0	0	0		3
	1			1								42						3
1,1,2015	1	1	2015	1	5	7			250250	21	2NULL	42	0	0	0	0		10.8496982.277751g mi
1,1,2015	1	1	2015	1	5	7			250250	21	1NULL	42	0	0	0	0		10.8496980.554168g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	122NULL	31	0	0	0	0		1 1 0.00121g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	121NULL	31	0	0	0	0	00.000495	1 10.000495g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	119NULL	31	0	0	0	0	0 0 1	1 0g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	118NULL	31	0	0	0	0	0 0.00893	1 1 0.00893g mi
1,1,2015	1	1	2015	1	5	7			250250	20	117NULL	31	0	0	0	0	00.001677	1 10.001677g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	116NULL	31	0	0	0	0	00.005532	1 10.005532g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	20	115NULL	31	0	0	0	0	00.000384	1 10.000384g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	112NULL	31	0	0	0	0	00.002206	1 10.002206g mi
1,1,2015	1	1	2015	1	5	7			250250	20	111NULL	31	0	0	0	0	00.006048	1 10.006048g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	110NULL	31	0	0	0	0	00.011136	1 10.011136g mi
1,1,2015	1	1	2015	1	5	7			250250	20	107NULL	31	0	0	0	0	00.011177	1 10.011177g mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	106NULL	31	0	0	0	0	00.011177	1 10.044259q mi
1,1,2015	1	1	2015	1	5	7	25		250250	20	100NULL	31	0	0	0	0	00.044239	1 10.012535g mi
		1	2015		5	7			250250	20		31	0	0	0	0		3
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	1	1	2015	1 1	5 5	7 7	25		250250 250250	20 20	87NULL 79NULL	31 31	0	0	0	0		1 10.096726g mi
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1.1.2003 1 2015 1 5 7 7 25 2502 2015 2	1,1,2015	1	1	2015	1	5	7	25	25025	250250	20	54NULL	31	0	0	0	0	01.52E-05	1 11.52E-05g mi
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1,2015	1,1,2015	1	1	2015	1	5	7	25	25025	250250	19	57NULL	21	0	0	0	0	04.28E-05	1 14.28E-05g mi
1,2015	1,1,2015	1	1	2015	1	5	7	25	25025	250250	19	56NULL	21	0	0	0	0	04.49E-06	1 14.49E-06g mi
1.1.2015		1	1	2015	1	5	7	25	25025	250250	19	55NULL	21	0	0	0	0	0 0.00019	
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1,1,2015 1 1 2015 1 5 7 25 25025 250250 18 56NULL 42 0 0 0 0 0 0.03.57E-05 10.849698 4.2E-05g mi 1,1,2015 1 1 2015 1 5 7 25 25025 250250 18 55NULL 42 0 0 0 0 0 0.0001417 10.8496980.001667g mi 1,1,2015 1 1 2015 1 5 7 25 25025 250250 18 54NULL 42 0 0 0 0 0 0.5.38E-05 10.8496986.33E-05g mi 1,1,2015 1 1 2015 1 5 7 25 25025 250250 18 53NULL 42 0 0 0 0 0.0001417 10.8496980.30E-05g mi 1,1,2015 1 1 2015 1 5 7 25 25025 250250 18 53NULL 42 0 0 0 0 0.0000196 10.8496988.000231g mi 1,1,2015 1 1 2015 1 5 7 25 25025 250250 18 51NULL 42 0 0 0 0 0.0000196 10.8496980.00031g mi																			3
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	1,1,2015	1										52NULL			0		0	00.000196	10.8496980.000231g mi
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	1,1,2015	1	1	2015	1	5	7	25	25025	250250	18	36NULL	42	0	0	0	0	00.001432	10.8496980.001 <u>6</u> 85g mi



1,1,2015	1	1	2015	1	5	7	25	25025	250250	18	35NULL	42	0	0	0	0	00.000721	10.8496980.000849g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	18	31NULL	42	0	0	0	0	00.008089	10.8496980.009519g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	18	5NULL	42	0	0	0	0	00.026002	10.8496980.030601g mi
1,1,2015	1	1	2015	1	5	7	25	25025		18	3NULL	42	0	0	0	0	06.236032	10.8496987.339116g mi
1,1,2015	1	1	2015	1	5	7		25025		18	2NULL	42	0	0	0	0	02.031828	10.8496982.391235g mi
1,1,2015	1	1	2015	1	5	7	25	25025		18	1NULL	42	0	0	0	0	00.523628	10.8496980.616252g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	122NULL	31	0	0	0	0	0 0.00136	1 1 0.00136g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	121NULL	31	0	0	0	0	00.000556	1 10.000556g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	119NULL	31	0	0	0	0	0 0 1	
1,1,2015	1	1	2015	1	5	7	25	25025		17	118NULL	31	0	0	0	0	00.010046	1 10.010046g mi
1,1,2015 1,1,2015	1 1	1 1	2015 2015	1 1	5 5	7 7	25 25	25025 25025		17 17	117NULL 116NULL	31 31	0	0	0	0	00.001806 00.007326	1 10.001806g mi 1 10.007326g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	115NULL	31	0	0	0	0	00.007320	1 10.000436g mi
1,1,2015	1	1	2015	1	5	7		25025		17	112NULL	31	0	0	0	0	00.000430	1 10.002517g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	111NULL	31	0	0	0	0	00.006801	1 10.006801g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	110NULL	31	0	0	0	0	00.012562	1 10.012562g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	107NULL	31	0	0	0	0	0 0.01204	1 1 0.01204g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	17	106NULL	31	0	0	0	0	00.058606	1 10.058606g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	17	100NULL	31	0	0	0	0	00.014136	1 10.014136g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	17	91NULL	31	0	0	0	0	00.006649	1 10.006649g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	17	90NULL	31	0	0	0	0	0 504.506	1 1 504.506g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	87NULL	31	0	0	0	0	0 0.10622	1 1 0.10622g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	79NULL	31	0	0	0	0	00.102863	1 10.102863g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	66NULL	31	0	0	0	0	03.29E-05	1 13.29E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	59NULL	31	0	0	0	0	00.000215	1 10.000215g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17 17	58NULL	31	0	0	0	0	03.89E-05	1 13.89E-05g mi
1,1,2015 1,1,2015	1 1	1 1	2015 2015	1 1	5 5	7 7	25 25	25025 25025		17 17	57NULL 56NULL	31 31	0	0	0	0	04.27E-05 04.16E-06	1 14.27E-05g mi 1 14.16E-06g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	55NULL	31	0	0	0	0	00.000175	1 10.000175g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	54NULL	31	0	0	0	0	01.71E-05	1 11.71E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	53NULL	31	0	0	0	0	01.03E-05	1 11.03E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	52NULL	31	0	0	0	0	06.09E-06	1 16.09E-06g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	51NULL	31	0	0	0	0	01.51E-05	1 11.51E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	17	36NULL	31	0	0	0	0	0 0.00033	1 1 0.00033g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	17	35NULL	31	0	0	0	0	03.77E-05	1 13.77E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025		17	31NULL	31	0	0	0	0	00.009886	1 10.009886g mi
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1,1,2015	1	1	2015	1	5	7	25	25025		17	3NULL	31	0	0	0	0	00.358894	1 10.358894g mi
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1,1,2015 1,1,2015	1 1	1	2015	1 1	5	7	25	25025 25025		16	119NULL 118NULL	21 21	0	0	0	0	0 0 1 00.011567	. 1 0g mi 1 10.011567g mi
1,1,2015	1	1	2015	1	5	7	25	25025		16	117NULL	21	0	0	0	0	00.011307	1 10.001784g mi
1,1,2015	1	1	2015	1	5	7	25	25025		16	116NULL	21	0	0	0	0	00.001764	1 10.006553g mi
1,1,2015	1	1	2015	1	5	7	25	25025		16	115NULL	21	0	0	0	0	00.000436	1 10.000436g mi
1,1,2015	1	1	2015	1	5	7	25	25025		16	112NULL	21	0	0	0	0	00.001971	1 10.001971g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	16	111NULL	21	0	0	0	0	00.007866	1 10.007866g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	16	110NULL	21	0	0	0	0	00.013538	1 10.013538g mi
1,1,2015	1	1	2015	1	5	7		25025		16	107NULL	21	0	0	0	0	00.011893	1 10.011893g mi
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1,1,2015	1	1	2015	1	5	7	25 25	25025 25025		16 16	79NULL	21 21	0	0	0	0	00.096439	1 10.096439g mi
1,1,2015 1,1,2015	1 1	1 1	2015 2015	1	5 5	7	25	25025		16 16	66NULL 59NULL	21 21	0	0	0	0	03.22E-05 00.000258	1 13.22E-05g mi 1 10.000258g mi
1,1,2015	1	1	2015	1 1	5	7		25025		16	58NULL	21 21	0	0	0	0	04.57E-05	1 10.000258g mi 1 14.57E-05g mi
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1,1,2015	1	1	2015	1	5	7	25	25025		16	53NULL	21	0	0	0	0	0 1.2E-05	1 1 1.2E-05g mi
1,1,2015	1	1	2015	1	5	7		25025		16	52NULL	21	0	0	0	0	05.64E-06	1 15.64E-06g mi
1,1,2015	1	1	2015	1	5	7	25	25025		16	51NULL	21	0	0	0	0	01.48E-05	1 11.48E-05g mi
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1,1,2015 1,1,2015	1 1	1	2015	1 1	5	7		25025		15	122NULL 121NULL	42 42	0	0	0	0	00.005307	10.8496980.016829g mi 10.8496980.006246g mi
1,1,2015	1	1	2015	1	5	7	25	25025		15	119NULL	42	0	0	0	0		0.849698 0g mi
1,1,2015	1	1	2015	1	5	7		25025		15	118NULL	42	0	0	0	0	00.106204	10.849698 0.12499q mi
1,1,2015	1	1		1	5	7		25025		15	117NULL	42	0	0	0	0	00.003267	10.8496980.003845g mi
							_			_				_	_	_		<u> </u>



1,1	,2015	1	1	2015	1	5	7	25	25025 2	250250	15	116NULL	42	0	0	0	0	00.026425	10.8496980.031099g mi
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	,2015	1	1	2015	1	5	7	25	25025 2		14	117NULL	31	0	0	0	0	00.01312	1 1 0.01312g mi 1 10.001946g mi
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1,1	,2015	1	1	2015	1	5	7	25	25025 2	250250	14	107NULL	31	0	0	0	0	00.012972	1 10.012972g mi
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1,1	,2015	1	1	2015	1	5	7	25	25025 2	250250	14	100NULL	31	0	0	0	0	00.018313	1 10.018313g mi
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	,2015 ,2015	1 1	1	2015 2015	1 1	5 5	7 7	25 25	25025 2 25025 2		14 14	57NULL 56NULL	31 31	0	0	0	0	0 5.6E-05 05.43E-06	1 15.6E-05g mi 1 15.43E-06g mi
	.,2015	1	1	2015	1	5	7		25025 2		14	55NULL	31	0	0	0	0	05.43E-06 00.000229	1 15.43E-06g mi 1 10.000229g mi
	.,2015	1	1	2015	1	5	7	25	25025 2		14	54NULL	31	0	0	0	0	02.23E-05	1 12.23E-05g mi
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	,2015	1	1	2015	1	5	7		25025 2		14	31NULL	31	0	0	0	0	00.011002	1 10.011002g mi
1,1	,2015	1	1	2015	1	5	7	25	25025 2	250250	14	5NULL	31	0	0	0	0	00.005772	1 10.005772g mi
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1,1	,2015	1	1	2015	1	5	7				14	2NULL	31	0	0	0	0	02.858259	1 12.858259g mi
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	,2015	1	1	2015	1	5	7		25025 2		13	117NULL	21	0	0	0	0	00.001922	1 10.001922g mi
	,2015	1	1	2015 2015	1	5	7 7		25025 2 25025 2		13	116NULL	21	0	0	0	0	00.007455	1 10.007455g mi 1 10.000567g mi
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	,2015	1	1	2015	1	5	7		25025 2		13	107NULL	21	0	0	0	0	00.017032	1 10.012813g mi
	,2015	1	1	2015	1	5	7		25025 2		13	106NULL	21	0	0	0	0	00.059643	1 10.059643g mi
	,2015	1	1		1	5	7		25025 2		13	100NULL	21	0	0	0	0	0 0.01993	1 1 0.01993g mi
	,2015	1	1	2015	1	5	7		25025 2		13	91NULL	21	0	0	0	0	0 0.0056	1 1 0.0056g mi
,		1	1	2015	1	5	7		25025 2	250250	13	90NULL	21	0	0	0	0	0 424.675	1 1 424.675g mi
1,1	,2015 ,2015	1		2015	1	5	7			250250	13	87NULL	21	0	0	0	0	00.114388	1 10.114388g mi



1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	79NULL	21	0	0	0	0	00.108475	1 10.108475g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	66NULL	21	0	0	0	0	04.03E-05	1 14.03E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	59NULL	21	0	0	0	0	00.000336	1 10.000336g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	58NULL	21	0	0	0	0	05.96E-05	1 15.96E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	57NULL	21	0	0	0	0	05.97E-05	1 15.97E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	56NULL	21	0	0	0	0	06.26E-06	1 16.26E-06g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	55NULL	21	0	0	0	0	00.000265	1 10.000265g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	54NULL	21	0	0	0	0	02.66E-05	1 12.66E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	53NULL	21	0	0	0	0	01.57E-05	1 11.57E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	52NULL	21	0	0	0	0	07.33E-06	1 17.33E-06g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	51NULL	21	0	0	0	0	01.93E-05	1 11.93E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	36NULL	21	0	0	0	0	00.000511	1 10.000511g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	13	35NULL	21	0	0	0	0	05.32E-05	1 15.32E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	31NULL	21	0	0	0	0	00.008429	1 10.008429g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	5NULL	21	0	0	0	0	00.003431	1 10.003431g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	3NULL	21	0	0	0	0	00.277781	1 10.277781g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	2NULL	21	0	0	0	0	02.334802	1 12.334802g mi
1,1,2015	1	1	2015	1	5	7	25		250250	13	1NULL	21	0	0	0	0	00.111907	1 10.111907g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	122NULL	42	0	0	0	0	00.018331	10.8496980.021574g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	121NULL	42	0	0	0	0	00.006817	10.8496980.008022g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	119NULL	42	0	0	0	0		.0.849698 0g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	118NULL	42	0	0	0	0	00.134661	10.8496980.158481g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	117NULL	42	0	0	0	0	00.003519	10.8496980.004142g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	116NULL	42	0	0	0	0	00.031918	10.8496980.037564g mi
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1,1,2015	1	1	2015	1	5	7	25		250250	12	112NULL	42	0	0	0	0	00.074561	10.849698 0.08775g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	111NULL	42	0	0	0	0	00.091656	10.8496980.107869g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	110NULL	42	0	0	0	0	00.209222	10.8496980.246231g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	107NULL	42	0	0	0	0	00.023463	10.8496980.027613g mi
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1,1,2015	1	1	2015	1	5	7	25		250250	12	100NULL	42	0	0	0	0	00.227416	10.8496980.267643g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	91NULL	42	0	0	0	0	00.011332	10.8496980.013336g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	90NULL	42	0	0	0	0	0 880.665	10.8496981036.445g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	87NULL	42	0	0	0	0	00.788143	10.8496980.927557g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	79NULL	42	0	0	0	0	00.698582	10.8496980.822154g mi
1,1,2015	1	1 1	2015	1	5	7 7	25		250250	12	66NULL	42	0	0	0	0	00.000157	10.8496980.000184g mi
1,1,2015	1		2015 2015	1	5		25		250250	12 12	59NULL 58NULL	42 42	0	0	0	0	00.000833	10.849698 0.00098g mi
1,1,2015	1	1		1	5	7 7	25		250250		58NULL	42	0	0		0	00.000371	10.8496980.000436g mi
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1,1,2015	1	1	2015	1	5				250250	12	56NULL	42	0	0	0	0	05.49E-05	10.8496986.46E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	55NULL	42	0	0	0	0	00.002188	10.8496980.002575g mi
1,1,2015	1	1 1	2015 2015	1	5 5	7 7	25 25		250250	12 12	54NULL	42	0	0	0	0	07.95E-05	10.8496989.36E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250 250250	12	53NULL	42	0	0	0	0	00.000124	10.8496980.000146g mi
1,1,2015	1			1							52NULL	42					00.000276	10.8496980.000324g mi
1,1,2015	1	1 1	2015 2015	1 1	5 5	7 7	25 25		250250 250250	12 12	51NULL 36NULL	42 42	0	0	0	0	00.000798 00.002225	10.8496980.000939g mi
1,1,2015 1,1,2015	1	1	2015	1	5 5	7	25		250250	12		42	0	0	0	0	00.002223	10.8496980.002619g mi 10.8496980.001319g mi
1,1,2015	1	1	2015	1	5	7	25		250250	12	35NULL 31NIIII	42	0	0	0	0	00.001121	3
1,1,2015	1	1	2015	1	5	7	25		250250	12	31NULL 5NULL	42	0	0	0	0	00.007647	10.849698 0.009g mi 10.8496980.042445g mi
	1	1	2015	1	5	7	25		250250	12			0	0	0	0		
1,1,2015 1,1,2015	1	1	2015	1	5	7		25025		12	3NULL 2NULL	42 42	0	0	0	0	07.436566 02.417507	
1,1,2015	1	1	2015	1	5	7	25		250250	12	1NULL	42	0	0	0	0	00.734646	10.8496982.845136g mi 10.8496980.864596g mi
1,1,2015	1	1	2015	1	5	7	25		250250	11	122NULL	31	0	0	0	0	00.734646	
1,1,2015	1	1	2015	1	5 5	7		25025		11	122NULL 121NULL	31	0	0	0	0	00.001977	1 10.001977g mi 1 10.000807g mi
1,1,2015	1	1		1	5	7		25025		11	119NULL	31	0	0	0	0	0 0 1	
1,1,2015	1	1	2015	1	5	7	25		250250	11	118NULL	31	0	0	0	0	00.014595	1 10.014595g mi
1,1,2015	1	1	2015	1	5	7	25		250250	11	117NULL	31	0	0	0	0	00.014393	1 10.0014393g mi
1,1,2015	1	1	2015	1	5	7	25		250250	11	116NULL	31	0	0	0	0	00.002057	1 10.009857g mi
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1,1,2015	1	1	2015	1	5	7		25025		11	112NULL	31	0	0	0	0	00.003511	1 10.003511g mi
1,1,2015	1	1	2015	1	5	7		25025		11	111NULL	31	0	0	0	0	00.009883	1 10.009883g mi
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1,1,2015	1	1	2015	1	5	7		25025		11	107NULL	31	0	0	0	0	00.013977	1 10.013977g mi
1,1,2015	1	1	2015	1	5	7		25025		11	106NULL	31	0	0	0	0	00.078854	1 10.078854g mi
1,1,2015	1	1	2015	1	5	7	25		250250	11	100NULL	31	0	0	0	0	00.020368	1 10.020368g mi
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1,1,2015	1	1	2015	1	5	7	25		250250	11	87NULL	31	0	0	0	0	0 0.13722	1 1 0.13722g mi
1,1,2015	1	1	2015	1	5	7		25025		11	79NULL	31	0	0	0	0	00.132762	1 10.132762g mi
1,1,2015	1	1	2015	1	5	7		25025		11	66NULL	31	0	0	0	0	05.49E-05	1 15.49E-05g mi
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1,1,2015	1	1	2015	1	5	7	25		250250	11	55NULL	31	0	0	0	0	00.041-00	1 10.000255g mi
1,1,2015	1	1	2015	1	5	7		25025		11	54NULL	31	0	0	0	0	02.46E-05	1 12.46E-05g mi
1,1,2015	1	1	2015	1	5	7	25		250250	11	53NULL	31	0	0	0	0	0 1.5E-05	1 11.5E-05g mi
1,1,2015	1	1	2015	1	5	7		25025		11	52NULL	31	0	0	0	0	0 9.2E-06	1 19.2E-06g mi
1,1,2015	1	1		1	5	7		25025		11	51NULL	31	0	0	0	0	02.31E-05	1 12.31E-05g mi
,,_		_				•			,_,,				v	~	v	~	512 05	



1,1,2015	1	1	2015	1	5	7	25	25025	250250	11	36NULL	31	0	0	0	0	00.000475 1 10.000475g mi	
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1,1,2015	1	1		1	5	7	25		250250	11	31NULL	31	0	0	0	0	00.012699 1 10.012699q mi	l
		1	2015	1	5	7	25		250250	11			0	0	0	0	9	
1,1,2015	1										5NULL	31					5	
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1,1,2015	1	1	2015	1	5	7	25	25025	250250	10	115NULL	21	0	0	0	0	00.000647 1 10.000647g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	10	112NULL	21	0	0	0	0	00.002927 1 10.002927g mi	
1,1,2015	1	1	2015	1	5	7	25		250250	10	111NULL	21	0	0	0	0	00.011684 1 10.011684g mi	
		1	2015	1	5	7	25		250250	10	110NULL		0	0	0	0		
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1,1,2015	1	1	2015	1	5	7	25		250250	10	107NULL	21	0	0	0	0	00.013807 1 10.013807g mi	
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	1	1	2015	1	5	7	25		250250	10	87NULL	21	0	0	0	0	-	
1,1,2015																	9	
1,1,2015	1	1		1	5	7			250250	10	79NULL	21	0	0	0	0	00.125715 1 10.125715g mi	
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1,1,2015	1	1	2015	1	5	7	25		250250	10	56NULL	21	0	0	0	0	07.14E-06 1 17.14E-06g mi	
	1	1		1	5	7	25		250250	10		21	0	0	0	0	3	
1,1,2015											55NULL						3	ļ
1,1,2015	1	1	2015	1	5	7	25		250250	10	54NULL	21	0	0	0	0	03.03E-05 1 13.03E-05g mi	
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1,1,2015	1	1	2015	1	5	7	25	25025	250250	10	2NULL	21	0	0	0	0	0 2.64775 1 1 2.64775g mi	
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1,1,2015	1	1	2015	1	5	7	25		250250	9	122NULL	42	0	0	0	0	00.032626 10.8496980.038397g mi	
			2015				25			9						0		
1,1,2015	1	1		1	5	7			250250		121NULL	42	0	0	0		5	
1,1,2015	1	1	2015	1	5	7	25		250250	9	119NULL	42	0	0	0	0	0 0 10.849698 0g mi	
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						7	25			9			0			0		
1,1,2015	1	1	2015	1	5				250250		112NULL	42		0	0		00.154329 10.8496980.181628g mi	
1,1,2015	1	1	2015	1	5	7	25		250250	9	111NULL	42	0	0	0	0	00.163131 10.8496980.191987g mi	
1,1,2015	1	1	2015	1	5	7	25		250250	9	110NULL	42	0	0	0	0	00.394725 10.8496980.464547g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	9	107NULL	42	0	0	0	0	00.025276 10.8496980.029747g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	9	106NULL	42	0	0	0	0	0 0.42885 10.8496980.504709g mi	
1,1,2015	1	1	2015	1	5	7	25		250250	9	100NULL	42	0	0	0	0	00.429051 10.8496980.504945g mi	ļ
1,1,2015	1	1	2015	1	5	7	25		250250	9	91NULL	42	0	0	0	0	00.022944 10.8496980.027002g mi	
	_	_		_	5	7				0			0	0	0			
1,1,2015	1	1	2015	1	,	7	25		250250	9	90NULL	42			0	0	0 1/83.12	ļ
1,1,2015	1	1		1	5	7			250250	9	87NULL	42	0	0	0	0	01.374496 10.8496981.617629g mi	
1,1,2015	1	1		1	5	7	25		250250	9	79NULL	42	0	0	0	0	01.218527 10.8496981.434071g mi	ļ
1,1,2015	1	1		1	5	7	25		250250	9	66NULL	42	0	0	0	0	00.000235 10.8496980.000277g mi	ļ
1,1,2015	1	1	2015	1	5	7	25	25025	250250	9	59NULL	42	0	0	0	0	00.001486 10.8496980.001749g mi	
1,1,2015	1	1		1	5	7			250250	9	58NULL	42	0	0	0	0	0 0.00066 10.8496980.000777g mi	
1,1,2015	1	1		1	5	7			250250	9	57NULL	42	0	0	0	0	00.002429 10.8496980.002859g mi	
													0	0	0	0	3	ļ
1,1,2015	1	1		1	5	7	25		250250	9	56NULL	42					3	
1,1,2015	1	1		1	5	7	25		250250	9	55NULL	42	0	0	0	0	00.003893 10.8496980.004582g mi	ļ
1,1,2015	1	1		1	5	7			250250	9	54NULL	42	0	0	0	0	00.000142 10.8496980.000168g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	9	53NULL	42	0	0	0	0	00.000221 10.849698 0.00026g mi	ļ
1,1,2015	1	1		1	5	7	25	25025	250250	9	52NULL	42	0	0	0	0	00.000497 10.8496980.000585g mi	
1,1,2015	1	1		1	5	7	25		250250	9	51NULL	42	0	0	0	0	00.001419 10.849698 0.00167g mi	ļ
1,1,2015	1	1		1	5	7	25		250250	9	36NULL	42	0	0	0	0	00.003957 10.8496980.004657g mi	ļ
																	3	
1,1,2015	1	1		1	5	7			250250	9	35NULL	42	0	0	0	0	00.001993 10.8496980.002345g mi	l
	1	1		1	5	7			250250	9	31NULL	42	0	0	0	0	00.015484 10.8496980.018223g mi	
1,1,2015		1	2015	1	5	7	25	25025	250250	9	5NULL	42	0	0	0	0	00.064633 10.8496980.076066g mi	
1,1,2015 1,1,2015	1			1	5	7	25	25025	250250	9	3NULL	42	0	0	0	0	013.22065 10.84969815.55923g mi	
1,1,2015	1 1	1								9	2NULL	42	0	0	0	0	04.464046 10.8496985.253685g mi	
1,1,2015 1,1,2015	1	1				7	25	25025	25()25()									
1,1,2015 1,1,2015 1,1,2015	1 1	1	2015	1	5	7 7										Ω		
1,1,2015 1,1,2015 1,1,2015 1,1,2015	1 1 1	1 1	2015 2015	1 1	5 5	7	25	25025	250250	9	1NULL	42	0	0	0	0	01.283164 10.8496981.510142g mi	
1,1,2015 1,1,2015 1,1,2015 1,1,2015 1,1,2015	1 1 1	1 1 1	2015 2015 2015	1 1 1	5 5 5	7 7	25 25	25025 25025	250250 250250	9 8	1NULL 122NULL	42 31	0	0	0	0	01.283164 10.8496981.510142g mi 00.002079 1 10.002079g mi	
1,1,2015 1,1,2015 1,1,2015 1,1,2015 1,1,2015 1,1,2015	1 1 1 1	1 1 1	2015 2015 2015 2015	1 1 1	5 5 5 5	7 7 7	25 25 25	25025 25025 25025	250250 250250 250250	9 8 8	1NULL 122NULL 121NULL	42 31 31	0 0 0	0 0 0	0 0 0	0	01.283164 10.8496981.510142g mi 00.002079 1 10.002079g mi 00.000846 1 10.000846g mi	
1,1,2015 1,1,2015 1,1,2015 1,1,2015 1,1,2015	1 1 1	1 1 1	2015 2015 2015 2015	1 1 1	5 5 5	7 7	25 25	25025 25025 25025	250250 250250	9 8	1NULL 122NULL	42 31	0	0	0	0	01.283164 10.8496981.510142g mi 00.002079 1 10.002079g mi	
1,1,2015 1,1,2015 1,1,2015 1,1,2015 1,1,2015 1,1,2015	1 1 1 1	1 1 1	2015 2015 2015 2015 2015	1 1 1	5 5 5 5	7 7 7	25 25 25 25	25025 25025 25025 25025	250250 250250 250250	9 8 8	1NULL 122NULL 121NULL	42 31 31	0 0 0	0 0 0	0 0 0	0	01.283164 10.8496981.510142g mi 00.002079 1 10.002079g mi 00.000846 1 10.000846g mi	



1,1,2015	1	1	2015	1	5	7	25	25025	250250	8	117NULL	31	0	0	0	0	00.002259 1 10.0022	.59g mi
1,1,2015	1	1	2015	1	5	7	25		250250	8	116NULL	31	0	0	0	0	00.013053 1 10.0130	5
1,1,2015	1	1	2015	1	5	7	25		250250	8	115NULL	31	0	0	0	0	00.000702 1 10.0007	_
1,1,2015	1	1	2015	1	5	7	25		250250	8	112NULL	31	0	0	0	0	00.003819 1 10.0038	5
1,1,2015	1	1	2015	1	5	7	25	25025	250250	8	111NULL	31	0	0	0	0	00.010396 1 10.0103	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	8	110NULL	31	0	0	0	0	0 0.01919 1 1 0.0191	.9g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	8	107NULL	31	0	0	0	0	00.015057 1 10.0150	157g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	8	106NULL	31	0	0	0	0	00.104427 1 10.1044	-27g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	8	100NULL	31	0	0	0	0	00.021556 1 10.0215	56g mi
1,1,2015	1	1	2015	1	5	7	25		250250	8	91NULL	31	0	0	0	0	00.010751 1 10.0107	51g mi
1,1,2015	1	1	2015	1	5	7	25		250250	8	90NULL	31	0	0	0	0	0 815.733 1 1 815.73	
1,1,2015	1	1	2015	1	5	7	25		250250	8	87NULL	31	0	0	0	0	00.170907 1 10.1709	=
1,1,2015	1	1	2015	1	5	7			250250	8	79NULL	31	0	0	0	0	0 0.16485 1 1 0.1648	
1,1,2015	1	1	2015	1	5	7			250250	8	66NULL	31	0	0	0	0	08.24E-05 1 18.24E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	8	59NULL	31	0	0	0	0	00.000316 1 10.0003	
1,1,2015	1	1	2015	1	5	7	25		250250	8	58NULL	31	0	0	0	0	05.86E-05 1 15.86E-0	9
1,1,2015	1	1	2015	1	5	7			250250	8	57NULL	31	0	0	0	0	0 7E-05 1 1 7E-05	
1,1,2015	1	1 1	2015 2015	1 1	5 5	7 7	25 25		250250 250250	8 8	56NULL	31	0	0	0	0	06.35E-06 1 16.35E-0 00.000267 1 10.0002	5
1,1,2015 1,1,2015	1 1	1	2015	1	5	7	25		250250	8	55NULL 54NULL	31 31	0	0	0	0	00.000267 1 10.0002 02.52E-05 1 12.52E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	8	53NULL	31	0	0	0	0	01.57E-05 1 11.57E-0	=
1,1,2015	1	1	2015	1	5	7	25		250250	8	52NULL	31	0	0	0	0	01.07E-05 1 11.07E-0	5
1,1,2015	1	1	2015	1	5	7			250250	8	51NULL	31	0	0	0	0	02.67E-05 1 12.67E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	8	36NULL	31	0	0	0	0	00.000491 1 10.0004	=
1,1,2015	1	1	2015	1	5	7	25		250250	8	35NULL	31	0	0	0	0	06.12E-05 1 16.12E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	8	31NULL	31	0	0	0	0	00.015997 1 10.0159	
1,1,2015	1	1	2015	1	5	7			250250	8	5NULL	31	0	0	0	0	00.007421 1 10.00742	=
1,1,2015	1	1	2015	1	5	7	25		250250	8	3NULL	31	0	0	0	0	00.418902 1 10.41890	9
1,1,2015	1	1	2015	1	5	7	25		250250	8	2NULL	31	0	0	0	0	03.670059 1 13.67005	
1,1,2015	1	1	2015	1	5	7			250250	8	1NULL	31	0	0	0	0	0 0.17227 1 1 0.17227	3
1,1,2015	1	1	2015	1	5	7	25	25025	250250	7	122NULL	21	0	0	0	0	0 0.00261 1 1 0.0026	
1,1,2015	1	1	2015	1	5	7	25		250250	7	121NULL	21	0	0	0	0	00.001073 1 10.0010	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	7	119NULL	21	0	0	0	0	0 0 1 1 0g	mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	7	118NULL	21	0	0	0	0	00.019193 1 10.0191	.93g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	7	117NULL	21	0	0	0	0	00.002231 1 10.0022	:31g mi
1,1,2015	1	1	2015	1	5	7			250250	7	116NULL	21	0	0	0	0	00.011707 1 10.0117	
1,1,2015	1	1	2015	1	5	7			250250	7	115NULL	21	0	0	0	0	00.000725 1 10.0007	5
1,1,2015	1	1	2015	1	5	7	25		250250	7	112NULL	21	0	0	0	0	0 0.00327 1 1 0.0032	=
1,1,2015	1	1	2015	1	5	7	25		250250	7	111NULL	21	0	0	0	0	00.013052 1 10.0130	5
1,1,2015	1	1	2015	1	5	7	25		250250	7	110NULL	21	0	0	0	0	00.022463 1 10.0224	=
1,1,2015	1	1	2015	1	5	7	25		250250	7	107NULL	21	0	0	0	0	00.014873 1 10.0148	
1,1,2015	1	1	2015	1	5	7			250250	7	106NULL	21	0	0	0	0	00.093659 1 10.0936	
1,1,2015	1	1	2015	1	5	7	25		250250	7	100NULL	21	0	0	0	0	0 0.02539 1 1 0.0253	
1,1,2015	1	1	2015	1	5	7	25		250250	7	91NULL	21	0	0	0	0	00.008243 1 10.0082	=
1,1,2015	1	1	2015	1	5	7			250250	7	90NULL	21	0	0	0	0	0 625.143 1 1 625.14	
1,1,2015	1	1	2015	1	5	7			250250	7	87NULL	21	0	0	0	0	00.167207 1 10.1672	
1,1,2015	1	1	2015	1	5	7	25		250250	7	79NULL	21	0	0	0	0	00.158513 1 10.1585	=
1,1,2015	1	1	2015	1	5	7	25		250250	7	66NULL	21	0	0	0	0	08.05E-05 1 18.05E-0	=
1,1,2015	1	1	2015	1	5	7	25		250250	7	59NULL	21	-	0	0	0	00.000428 1 10.0004	5
1,1,2015 1,1,2015	1 1	1 1	2015 2015	1 1	5 5	7 7	25		250250 250250	7 7	58NULL 57NULL	21 21	0	0	0	0	07.59E-05 1 17.59E-0 0 7.6E-05 1 1 7.6E-05	
1,1,2015	1	1		1	5	7			250250	7	56NULL	21	0	0	0	0	07.98E-06 1 17.98E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	7	55NULL	21	0	0	0	0	00.000338 1 10.0003	=
1,1,2015	1	1	2015	1	5	7			250250	7	54NULL	21	0	0	0	0	03.39E-05 1 13.39E-0	
1,1,2015	1		2015	1	5	7			250250	7	53NULL	21	0	0	0	0	01.99E-05 1 11.99E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	7	52NULL	21	0	0	0	0	09.35E-06 1 19.35E-0	5
1,1,2015	1	1	2015	1	5	7	25		250250	7	51NULL	21	0	0	0	0	02.46E-05 1 12.46E-0	
1,1,2015	1	1	2015	1	5	7	25		250250	7	36NULL	21	0	0	0	0	00.000651 1 10.0006	
1,1,2015	1	1	2015	1	5	7	25		250250	7	35NULL	21	0	0	0	0	06.77E-05 1 16.77E-0	
1,1,2015	1	1	2015	1	5	7			250250	7	31NULL	21	0	0	0	0	00.012408 1 10.0124	5
1,1,2015	1	1		1	5	7	25		250250	7	5NULL	21	0	0	0	0	00.004563 1 10.00456	
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1,1,2015	1	1	2015	1	5	7	25		250250	7	2NULL	21	0	0	0	0	03.067966 1 13.06796	=
1,1,2015	1	1		1	5	7			250250	7	1NULL	21	0	0	0	0	00.163076 1 10.16307	
1,1,2015	1	1	2015	1	5	7	25		250250	6	122NULL	42	0	0	0	0	00.058853 10.8496980.0	
1,1,2015	1	1	2015	1	5	7	25		250250	6	121NULL	42	0	0	0	0	00.021871 10.849698 0.)2574g mi
1,1,2015	1	1	2015	1	5	7	25		250250	6	119NULL	42	0	0	0	0	0 0 10.849698 00	
1,1,2015	1	1	2015	1	5	7	25		250250	6	118NULL	42	0	0	0	0	00.433913 10.8496980.5	
1,1,2015	1	1	2015	1	5	7			250250	6	117NULL	42	0	0	0	0	00.004084 10.8496980.0	
1,1,2015	1	1		1	5	7			250250	6	116NULL	42	0	0	0	0	00.104596 10.8496980.1	3
1,1,2015	1	1	2015	1	5	7	25		250250	6	115NULL	42	0	0	0	0	00.028624 10.8496980.0	3
1,1,2015	1	1	2015	1	5	7	25		250250	6	112NULL	42	0	0	0	0	00.283879 10.8496980.3	-
1,1,2015	1	1		1	5	7			250250	6	111NULL	42	0	0	0	0	00.294267 10.849698 0.3	
1,1,2015	1	1	2015	1	5	7	25		250250	6	110NULL	42	0	0	0	0	00.717792 10.8496980.8	
1,1,2015	1	1	2015	1	5	7	25		250250	6	107NULL	42	0	0	0	0	0 0.02723 10.8496980.0	3
1,1,2015	1	1	2015	1	5	7			250250	6	106NULL	42	0	0	0	0	00.836766 10.849698 0.9	
1,1,2015	1	1	2015	1	5	7	25		250250	6	100NULL	42	0	0	0	0	00.780211 10.8496980.9	5
1,1,2015	1	1	2015	1	5	7			250250	6	91NULL	42	0	0	0	0	0 0.04066 10.8496980.04	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	6	90NULL	42	0	0	0	0	0 3159.96 10.849698371	3.921g mi



1,1,2015	1	1	2015	1	5	7	25	25025	250250	6	87NULL	42	0	0	0	0	02.503917	10.8496982.946832g mi
1,1,2015	1	1		1	5	7	25		250250	6	79NULL	42	0	0	0	0	02.219894	10.8496982.612568g mi
1,1,2015	1	1		1	5	7	25		250250	6	66NULL	42	0	0	0	0	0 0.00047	10.8496980.000553g mi
1,1,2015	1	1		1	5	7	25		250250	6	59NULL	42	0	0	0	0	00.00047	10.8496980.000333g mi
																		5
1,1,2015	1	1		1	5	7	25		250250	6	58NULL	42	0	0	0	0	00.001191	10.8496980.001401g mi
1,1,2015	1	1		1	5	7	25		250250	6	57NULL	42	0	0	0	0	00.004381	10.8496980.005156g mi
1,1,2015	1	1		1	5	7	25		250250	6	56NULL	42	0	0	0	0	00.000176	10.8496980.000208g mi
1,1,2015	1	1		1	5	7	25	25025	250250	6	55NULL	42	0	0	0	0	00.007023	10.8496980.008265g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	6	54NULL	42	0	0	0	0	00.000257	10.8496980.000303g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	6	53NULL	42	0	0	0	0	00.000398	10.8496980.000469g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	6	52NULL	42	0	0	0	0	0 0.0009	10.8496980.001059g mi
1,1,2015	1	1		1	5	7	25		250250	6	51NULL	42	0	0	0	0	00.002559	10.8496980.003012g mi
1,1,2015	1	1		1	5	7	25		250250	6	36NULL	42	0	0	0	0	00.007136	10.8496980.008398g mi
1,1,2015	1	1		1	5	7	25		250250	6	35NULL	42	0	0	0	0	00.003593	10.8496980.004229g mi
1,1,2015	1	1		1	5	7	25		250250	6	31NULL	42	0	0	0	0	0 0.02744	10.8496980.032294g mi
	1	1		1	5	7	25		250250	6	5NULL	42	0	0	0	0	00.115503	
1,1,2015																		3
1,1,2015	1	1		1	5	7	25		250250	6	3NULL	42	0	0	0	0	024.50434	10.84969828.83888g mi
1,1,2015	1	1		1	5	7	25		250250	6	2NULL	42	0	0	0	0	08.061411	10.8496989.487384g mi
1,1,2015	1	1		1	5	7	25		250250	6	1NULL	42	0	0	0	0	02.335388	10.8496982.748492g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	122NULL	31	0	0	0	0	00.002387	1 10.002387g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	121NULL	31	0	0	0	0	00.000962	1 10.000962g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	119NULL	31	0	0	0	0	0 0 1	. 1 0g mi
1,1,2015	1	1		1	5	7	25		250250	5	118NULL	31	0	0	0	0	00.017697	1 10.017697g mi
1,1,2015	1	1		1	5	7	25		250250	5	117NULL	31	0	0	0	0	00.002434	1 10.002434g mi
1,1,2015	1	1		1	5	7	25		250250	5	116NULL	31	0	0	0	0	00.022643	1 10.022643g mi
1,1,2015	1	1		1	5	7	25		250250	5	115NULL	31	0	0	0	0	00.022043	1 10.002893g mi
						7				5						0		<u> </u>
1,1,2015	1	1		1	5		25		250250		112NULL	31	0	0	0		00.004744	1 10.004744g mi
1,1,2015	1	1		1	5	7	25		250250	5	111NULL	31	0	0	0	0	00.011936	1 10.011936g mi
1,1,2015	1	1		1	5	7	25		250250	5	110NULL	31	0	0	0	0	00.022441	1 10.022441g mi
1,1,2015	1	1		1	5	7	25		250250	5	107NULL	31	0	0	0	0	00.016225	1 10.016225g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	106NULL	31	0	0	0	0	00.181144	1 10.181144g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	100NULL	31	0	0	0	0	00.025117	1 10.025117g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	91NULL	31	0	0	0	0	00.017392	1 10.017392g mi
1,1,2015	1	1		1	5	7	25		250250	5	90NULL	31	0	0	0	0	0 1319.55	1 1 1319.55g mi
1,1,2015	1	1		1	5	7	25		250250	5	87NULL	31	0	0	0	0	00.271967	1 10.271967g mi
1,1,2015	1	1		1	5	7	25		250250	5	79NULL	31	0	0	0	0	00.261112	1 10.261112g mi
1,1,2015	1	1		1	5	7	25		250250	5	66NULL	31	0	0	0	0	00.000165	1 10.000165g mi
1,1,2015	1	1		1	5	7	25		250250	5	59NULL	31	0	0	0	0	00.000103	1 10.000339g mi
																		<u> </u>
1,1,2015	1	1		1	5	7	25		250250	5	58NULL	31	0	0	0	0	06.55E-05	1 16.55E-05g mi
1,1,2015	1	1		1	5	7	25		250250	5	57NULL	31	0	0	0	0	08.94E-05	1 18.94E-05g mi
1,1,2015	1	1		1	5	7	25		250250	5	56NULL	31	0	0	0	0	07.28E-06	1 17.28E-06g mi
1,1,2015	1	1		1	5	7	25		250250	5	55NULL	31	0	0	0	0	00.000305	1 10.000305g mi
1,1,2015	1	1		1	5	7	25		250250	5	54NULL	31	0	0	0	0	02.73E-05	1 12.73E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	53NULL	31	0	0	0	0	01.79E-05	1 11.79E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	5	52NULL	31	0	0	0	0	0 1.5E-05	1 11.5E-05g mi
1,1,2015	1	1		1	5	7	25		250250	5	51NULL	31	0	0	0	0	03.74E-05	1 13.74E-05g mi
1,1,2015	1	1		1	5	7	25		250250	5	36NULL	31	0	0	0	0	00.000537	1 10.000537g mi
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1,1,2015	1	1		1	5	7	25		250250	5	5NULL	31	0	0	0	0	0 0.01046	
		1				7			250250	5 5			0	0	0			
1,1,2015	1			1	5		25				3NULL	31				0	00.502396	1 10.502396g mi
1,1,2015	1	1		1	5	7	25		250250	5	2NULL	31	0	0	0	0	05.026405	1 15.026405g mi
1,1,2015	1	1		1	5	7	25		250250	5	1NULL	31	0	0	0	0	00.271572	1 10.271572g mi
1,1,2015	1	1		1	5	7	25		250250	4	122NULL	21	0	0	0	0	00.003431	1 10.003431g mi
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1,1,2015	1	1		1	5	7	25		250250	4	119NULL	21	0	0	0	0	0 0 1	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	118NULL	21	0	0	0	0	00.025232	1 10.025232g mi
1,1,2015	1	1	2015	1	5	7	25		250250	4	117NULL	21	0	0	0	0	00.002404	1 10.002404g mi
1,1,2015	1	1	2015	1	5	7			250250	4	116NULL	21	0	0	0	0	00.020168	1 10.020168g mi
1,1,2015	1	1	2015	1	5	7	25		250250	4	115NULL	21	0	0	0	0	00.000958	1 10.000958g mi
1,1,2015	1	1		1	5	7			250250	4	112NULL	21	0	0	0	0	00.004299	1 10.004299g mi
1,1,2015	1	1		1	5	7			250250	4	111NULL	21	0	0	0	0	00.004233	1 10.0042339 mi
									250250		111NULL					0		
1,1,2015	1	1		1	5	7	25			4		21	0	0	0		00.029531	1 10.029531g mi
1,1,2015	1	1		1	5	7			250250	4	107NULL	21	0	0	0	0	00.016027	1 10.016027g mi
1,1,2015	1	1		1	5	7			250250	4	106NULL	21	0	0	0	0	00.161345	1 10.161345g mi
1,1,2015	1	1		1	5	7	25		250250	4	100NULL	21	0	0	0	0	0 0.03338	1 1 0.03338g mi
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1,1,2015	1	1		1	5	7	25	25025	250250	4	87NULL	21	0	0	0	0	00.271186	1 10.271186g mi
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1,1,2015	1	1		1	5	7			250250	4	66NULL	21	0	0	0	0	00.000161	1 10.000161g mi
1,1,2015	1	1		1	5	7	25		250250	4	59NULL	21	0	0	0	0	00.000161	1 10.000563g mi
1,1,2015	1	1		1	5	7			250250	4	58NULL	21	0	0	0	0	09.97E-05	1 19.97E-05g mi
					5	7			250250	4		21	0	0		0	09.97E-05	
1,1,2015	1	1		1							57NULL				0			1 19.99E-05g mi
1,1,2015	1	1		1	5	7	25		250250	4	56NULL	21	0	0	0	0	01.05E-05	1 11.05E-05g mi
1,1,2015	1	1		1	5	7			250250	4	55NULL	21	0	0	0	0	00.000444	1 10.000444g mi
1,1,2015	1	1		1	5	7			250250	4	54NULL	21	0	0	0	0	04.45E-05	1 14.45E-05g mi
1,1,2015	1	1		1	5	7	25		250250	4	53NULL	21	0	0	0	0	02.62E-05	1 12.62E-05g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	52NULL	21	0	0	0	0	01.23E-05	1 11.23E-05g mi



1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	51NULL	21	0	0	0	0	03.23E-05 1 13.23E-05g mi
1,1,2015	1	1	2015	1	5	7			250250	4	36NULL	21	0	0	0	0	00.000855 1 10.000855g mi
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1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	3NULL	21	0	0	0	0	00.358111 1 10.358111g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	2NULL	21	0	0	0	0	04.328626 1 14.328626g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	1NULL	21	0	0	0	0	00.263549 1 10.263549g mi
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1,1,2015	1	1	2015	1	5	7	25		250250	3	119NULL	42	0	0	0	0	0 0 1 0NULL g mi
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1,1,2015	1	1	2015	1	5	7			250250	3	90NULL	42	0	0	0	0	0 6608.26 1 ONULL g mi
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1,1,2015	1	1	2015	1	5	7			250250	3	59NULL	42	0	0	0	0	00.011826 1 0NULL g mi
1,1,2015	1	1	2015	1	5	7	25		250250	3	58NULL	42	0	0	0	0	00.005311 1 0NULL g mi
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1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	1NULL	42	0	0	0	0	08.160522 1 0NULL g mi
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1,1,2015 1,1,2015	1	1	2015 2015	1 1	5	7 7	25		250250	2	66NULL	31 31	0	0	0	0	0 0.9055 1 0NULL g mi 00.000824 1 0NULL g mi
1,1,2015	1 1	1	2015	1	5	7			250250	2	59NULL	31	0	0	0	0	5
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1,1,2015	1	1	2015	1	5	7	25		250250	2	57NULL	31	0	0	0	0	00.000165 1 0NULL g mi 00.000291 1 0NULL g mi
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1,1,2015	1	1	2015	1	5	7	25		250250	2	55NULL	31	0	0	0	0	00.000802 1 0NULL g mi
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1,1,2015	1	1	2015	1	5	7	25 25025 250250		87NULL	21	0	0	0	0	01.077877	1 ONULL g mi
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1,1,2015	1	1	2015	1	5	7	25 25025 250250		58NULL	21	0	0	0	0	00.000337	1 ONULL g mi
1,1,2015	1 1	1 1	2015 2015	1 1	5 5	7 7	25 25025 250250 25 25025 250250		57NULL	21 21	0	0	0	0	00.000337	1 ONULL g mi 1 ONULL g mi
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1,1,2015	1	1	2015	1	5	7	25 25025 250250		52NULL	21	0	0	0	0	04.18E-05	1 ONULL g mi
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2,1,2015	2	1	2015	7	5	16	25 25025 25025		122NULL	42	0	0	0	0	00.009855	10.8496980.011598g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025) 24	121NULL	42	0	0	0	0	00.003643	10.8496980.004287g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		119NULL	42	0	0	0	0	0 0 1	10.849698 0g mi
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2,1,2015	2	1	2015	7	5	16	25 25025 25025		107NULL	42	0	0	0	0	00.017419	10.849698 0.0205g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		106NULL	42	0	0	0	0	00.135903	10.8496980.159943g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		100NULL	42	0	0	0	0	0 0.19655	10.8496980.231317g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		91NULL	42	0	0	0	0	00.012912	10.8496980.015197g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		90NULL	42	0	0	0	0	0 1003.52	10.8496981181.031g mi
2,1,2015	2	1	2015	7	5	16 16	25 25025 25025		87NULL	42	0	0	0	0	0 0.44746	10.8496980.526611g mi
2,1,2015	2	1	2015	7	5	16 16	25 25025 25025		79NULL	42	0	0	0	0	0 0.39744	10.8496980.467743g mi
2,1,2015	2	1 1	2015 2015	7 7	5 5	16	25 25025 25025 25 25025 25025		66NULL	42	0	0	0	0	06.72E-05 00.000459	10.8496987.91E-05g mi
2,1,2015 2,1,2015	2	1	2015	7	5	16 16	25 25025 25025 25 25025 25025		59NULL 58NULL	42 42	0	0	0	0	0 0.0002	10.849698 0.00054g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		57NULL	42	0	0	0	0	00.0002	10.8496980.000235g mi 10.8496980.000857g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		56NULL	42	0	0	0	0	02.96E-05	10.8496983.48E-05q mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		55NULL	42	0	0	0	0	00.001175	10.8496980.001382g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		54NULL	42	0	0	0	0	04.57E-05	10.8496985.37E-05g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		53NULL	42	0	0	0	0	06.71E-05	10.849698 7.9E-05g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		52NULL	42	0	0	0	0	00.711-03	10.8496980.000201g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		51NULL	42	0	0	0	0	00.000425	10.849698 0.0005g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		36NULL	42	0	0	0	0	00.000423	10.8496980.001392g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		35NULL	42	0	0	0	0	00.000596	10.8496980.000701g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		31NULL	42	0	0	0	0	00.008714	10.8496980.010255g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		5NULL	42	0	0	0	0	00.020736	10.8496980.024404g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		3NULL	42	0	0	0	0	04.464876	10.8496985.254662g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		2NULL	42	0	0	0	0	01.798668	10.8496982.116832g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		1NULL	42	0	0	0	0	00.418176	10.8496980.492147g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		122NULL	31	0	0	0	0	00.000515	1 10.000515g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025	23	121NULL	31	0	0	0	0	0 0.00021	1 1 0.00021g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025	23	119NULL	31	0	0	0	0	0 0 1	1 1 0g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		118NULL	31	0	0	0	0	00.003821	1 10.003821g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		117NULL	31	0	0	0	0	00.001556	1 10.001556g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		116NULL	31	0	0	0	0	00.004132	1 10.004132g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		115NULL	31	0	0	0	0	00.000185	1 10.000185g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		112NULL	31	0	0	0	0	00.001342	1 10.001342g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		111NULL	31	0	0	0	0	00.002576	1 10.002576g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		110NULL	31	0	0	0	0	00.005162	1 10.005162g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		107NULL	31	0	0	0	0	00.010374	1 10.010374g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		106NULL	31	0	0	0	0	0 0.03306	1 1 0.03306g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025		100NULL	31	0	0	0	0	00.005786	1 10.005786g mi
2,1,2015	2	1	2015	7	5	16	25 25025 25025	23	91NULL	31	0	0	0	0	00.006175	1 10.006175g mi



2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	23	90NULL	31	0	0	0	0	0 468.512	1 1 468.512g mi
2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	23	87NULL	31	0	0	0	0	00.144553	1 10.144553g mi
2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	23	79NULL	31	0	0	0	0	00.136643	1 10.136643g mi
2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	23	66NULL	31	0	0	0	0	02.35E-05	1 12.35E-05g mi
2,1,2015	2	1 20		7	5	16		250250	23	59NULL	31	0	0	0	0	0 7.9E-05	1 1 7.9E-05g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	58NULL	31	0	0	0	0	01.46E-05	1 11.46E-05g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	57NULL	31	0	0	0	0	01.71E-05	1 11.71E-05g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	56NULL	31	0	0	0	0	01.57E-06	1 11.57E-06g mi
2,1,2015	2	1 20		7	5	16		250250	23	55NULL	31	0	0	0	0	06.62E-05	1 16.62E-05g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	54NULL	31	0	0	0	0	06.32E-06	1 16.32E-06g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	53NULL	31	0	0	0	0	0 3.9E-06	1 13.9E-06g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	52NULL	31	0	0	0	0	02.74E-06	1 12.74E-06g mi
2,1,2015	2	1 20		7	5	16		250250	23	51NULL	31	0	0	0	0	06.41E-06	1 16.41E-06g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	36NULL	31	0	0	0	0	00.000122	1 10.000122g mi
2,1,2015	2	1 20 1 20		7 7	5	16		25 250250 25 250250	23	35NULL	31	0	0	0	0	01.49E-05	1 11.49E-05g mi
2,1,2015	2			7	5 5	16 16		250250	23	31NULL	31	0			0	00.009182	1 10.009182g mi
2,1,2015 2,1,2015	2	1 20 1 20		7	5	16		250250	23 23	5NULL 3NULL	31 31	0	0	0	0	00.005548 00.285791	1 10.005548g mi 1 10.285791g mi
2,1,2015	2	1 20		7	5	16		250250	23	2NULL	31	0	0	0	0	03.087763	1 13.087763g mi
2,1,2015	2	1 20		7	5	16		5 250250	23	1NULL	31	0	0	0	0	00.142191	1 10.142191g mi
2,1,2015	2	1 20		7	5	16		250250	22	122NULL	21	0	0	0	0	00.000435	1 10.000435g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	121NULL	21	0	0	0	0	00.000179	1 10.0004339 mi
2,1,2015	2	1 20		7	5	16		5 250250	22	119NULL	21	0	0	0	0		1 1 0g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	118NULL	21	0	0	0	0	00.003202	1 10.003202g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	117NULL	21	0	0	0	0	00.003202	1 10.001537g mi
2,1,2015	2	1 20		7	5	16		25 250250	22	116NULL	21	0	0	0	0	00.001557	1 10.003692g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	115NULL	21	0	0	0	0	00.000122	1 10.000122g mi
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2,1,2015	2	1 20		7	5	16		5 250250	22	111NULL	21	0	0	0	0	00.002176	1 10.002176g mi
2,1,2015	2	1 20		7	5	16		25 250250	22	110NULL	21	0	0	0	0	00.003748	1 10.003748g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	107NULL	21	0	0	0	0	00.010247	1 10.010247g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	106NULL	21	0	0	0	0	00.029535	1 10.029535g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	100NULL	21	0	0	0	0	00.004235	1 10.004235g mi
2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	22	91NULL	21	0	0	0	0	00.004611	1 10.004611g mi
2,1,2015	2	1 20		7	5	16	25 2502	5 250250	22	90NULL	21	0	0	0	0	0 349.711	1 1 349.711g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	87NULL	21	0	0	0	0	00.153542	1 10.15354 ² g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	79NULL	21	0	0	0	0	00.141749	1 10.141749g mi
2,1,2015	2	1 20		7	5	16		250250	22	66NULL	21	0	0	0	0	0 2.3E-05	1 1 2.3E-05g mi
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2,1,2015	2	1 20		7	5	16		5 250250	22	58NULL	21	0	0	0	0	01.26E-05	1 11.26E-05g mi
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2,1,2015	2	1 20		7	5	16		250250	22	51NULL	21	0	0	0	0	04.15E-06	1 14.15E-06g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	36NULL	21	0	0	0	0	00.000108	1 10.000108g mi
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2,1,2015	2	1 20		7	5	16		5 250250	22	31NULL	21	0	0	0	0	00.006941	1 10.006941g mi
2,1,2015	2	1 20		7	5	16		250250	22	5NULL	21	0	0	0	0	00.003071	1 10.003071g mi
2,1,2015	2	1 20		7	5	16		5 250250	22	3NULL	21	0	0	0	0	00.194275	1 10.194275g mi
2,1,2015	2	1 20		7	5	16		250250	22	2NULL	21	0	0	0	0	02.429258	1 12.429258g mi
2,1,2015	2	1 20 1 20		7 7	5 5	16 16		250250	22 21	1NULL	21 42	0	0	0	0	00.144821	1 10.144821g mi
2,1,2015				7	-			250250		122NULL		0	0	0	-	00.010268 00.003798	10.8496980.012085g mi 10.8496980.004469g mi
2,1,2015 2,1,2015	2	1 20		7	5 5	16 16		25 250250 25 250250	21 21	121NULL 119NULL	42 42	0	0	0	0		10.8496980.004469g mi 10.849698 0g mi
2,1,2015	2	1 20		7	5 5	16		250250 25 250250	21	119NULL	42	0	0	0	0	00.077746	10.8496980.091499g mi
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2,1,2015	2	1 20		7	5	16		250250	21	116NULL	42	0	0	0	0	00.002814	10.8496980.024635g mi
2,1,2015	2	1 20		7	5	16		250250	21	115NULL	42	0	0	0	0	00.020932	10.8496980.008295g mi
2,1,2015	2	1 20		7	5	16		250250	21	112NULL	42	0	0	0	0	0 0.10499	10.8496980.123562g mi
2,1,2015	2	1 20		7	5	16		250250	21	111NULL	42	0	0	0	0	00.051342	10.8496980.060423g mi
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2,1,2015	2	1 20		7	5	16		5 250250	21	106NULL	42	0	0	0	0	00.167459	10.8496980.197081g mi
2,1,2015	2	1 20		7	5	16		5 250250	21	100NULL	42	0	0	0	0	00.198627	10.8496980.233762g mi
2,1,2015	2	1 20		7	5	16		25 250250	21	91NULL	42	0	0	0	0	00.013452	10.8496980.015832g mi
2,1,2015	2	1 20		7	5	16		5 250250	21	90NULL	42	0	0	0	0	0 1045.46	10.849698 1230.39g mi
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2,1,2015	2	1 20		7	5	16		5 250250	21	79NULL	42	0	0	0	0	00.448952	10.8496980.528366g mi
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2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	21	59NULL	42	0	0	0	0	00.000477	10.8496980.000561g mi
2,1,2015	2	1 20		7	5	16		5 250250	21	58NULL	42	0	0	0	0	00.000208	10.8496980.000245g mi
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2,1,2015	2	1 20	15	7	5	16	25 2502	5 250250	21	53NULL	42	0	0	0	0	06.99E-05	10.8496988.22E-05g mi



2,1,2015	2	1	2015	7	5	16	25 25	250250	21	52NULL	42	0	0	0	0	00.000176	10.8496980.000207g mi
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2,1,2015	2	1	2015	7	5	16		25 250250	21	36NULL	42	0	0	0	0	00.001234	10.8496980.001452g mi
2,1,2015	2	1	2015	7	5	16		25 250250	21	35NULL	42	0	0	0	0	00.001231	10.8496980.000731g mi
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2,1,2015	2	1	2015	7	5	16	25 25	250250	21	2NULL	42	0	0	0	0	01.935401	10.8496982.277751g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	21	1NULL	42	0	0	0	0	00.472438	10.8496980.556008g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	122NULL	31	0	0	0	0	00.000563	1 10.000563g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	121NULL	31	0	0	0	0	00.000303	
																	9
2,1,2015	2	1	2015	7	5	16		250250	20	119NULL	31	0	0	0	0		1 1 0g mi
2,1,2015	2	1	2015	7	5	16		250250	20	118NULL	31	0	0	0	0	00.004173	1 10.004173g mi
2,1,2015	2	1	2015	7	5	16	25 25	025 250250	20	117NULL	31	0	0	0	0	00.001677	1 10.001677g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	116NULL	31	0	0	0	0	00.005532	1 10.005532g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	115NULL	31	0	0	0	0	00.000202	1 10.000202g mi
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	2	1	2015	7				25 250250	20				0	0	0		9
2,1,2015					5	16				110NULL	31	0				00.005569	1 10.005569g mi
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2,1,2015	2	1	2015	7	5	16	25 25	250250	20	106NULL	31	0	0	0	0	00.044259	1 10.044259g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	100NULL	31	0	0	0	0	00.006242	1 10.006242g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	91NULL	31	0	0	0	0	0 0.00652	1 1 0.00652g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	90NULL	31	0	0	0	0	0 494.731	1 1 494.731g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	87NULL	31	0	0	0	0	0 0.15216	1 1 0.15216g mi
		1		7	5								0				3
2,1,2015	2		2015			16		25 250250	20	79NULL	31	0		0	0	00.144147	1 10.144147g mi
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2,1,2015	2	1	2015	7	5	16		250250	20	59NULL	31	0	0	0	0	08.56E-05	1 18.56E-05g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	58NULL	31	0	0	0	0	01.59E-05	1 11.59E-05g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	57NULL	31	0	0	0	0	01.89E-05	1 11.89E-05g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	56NULL	31	0	0	0	0	01.72E-06	1 11.72E-06g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	55NULL	31	0	0	0	0	07.23E-05	1 17.23E-05g mi
																	9
2,1,2015	2	1	2015	7	5	16		250250	20	54NULL	31	0	0	0	0	06.85E-06	1 16.85E-06g mi
2,1,2015	2	1	2015	7	5	16		250250	20	53NULL	31	0	0	0	0	04.26E-06	1 14.26E-06g mi
2,1,2015	2	1	2015	7	5	16	25 25	025 250250	20	52NULL	31	0	0	0	0	03.05E-06	1 13.05E-06g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	51NULL	31	0	0	0	0	07.21E-06	1 17.21E-06g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	36NULL	31	0	0	0	0	00.000133	1 10.000133g mi
2,1,2015	2	1	2015	7	5	16		25 250250	20	35NULL	31	0	0	0	0	01.65E-05	1 11.65E-05g mi
	2	1	2015	7	5	16			20			0	0	0	0		9
2,1,2015								250250		31NULL	31					00.009695	9
2,1,2015	2	1	2015	7	5	16		250250	20	5NULL	31	0	0	0	0	00.005913	1 10.005913g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	3NULL	31	0	0	0	0	00.287515	1 10.287515g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	2NULL	31	0	0	0	0	03.289238	1 13.289238g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	20	1NULL	31	0	0	0	0	00.150061	1 10.150061g mi
2,1,2015	2	1	2015	7	5	16		25 250250	19	122NULL	21	0	0	0	0	00.000472	1 10.000472g mi
	2	1	2015	7	5	16		25 250250	19	121NULL	21	0	0	0	0	00.000172	
2,1,2015																	9
2,1,2015	2	1	2015	7	5	16		250250	19	119NULL	21	0	0	0	0		1 1 0g mi
2,1,2015	2	1	2015	7	5	16	25 25	025 250250	19	118NULL	21	0	0	0	0	0 0.00347	1 1 0.00347g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	19	117NULL	21	0	0	0	0	00.001656	1 10.001656g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	19	116NULL	21	0	0	0	0	00.004936	1 10.004936g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	19	115NULL	21	0	0	0	0	00.000133	1 10.000133g mi
2,1,2015	2	1	2015	7	5	16		25 250250	19	112NULL	21	0	0	0	0	00.000592	1 10.000592g mi
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2,1,2015										111NULL						00.002359	9
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2,1,2015	2	1	2015	7	5	16	25 25	250250	19	106NULL	21	0	0	0	0	00.039484	1 10.039484g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	19	100NULL	21	0	0	0	0	0 0.00459	1 1 0.00459g mi
2,1,2015	2		2015	7	5	16		250250	19	91NULL	21	0	0	0	0	00.004908	1 10.004908g mi
2,1,2015	2		2015	7	5	16		25 250250	19	90NULL	21	0	0	0	0	0 372.2	1 1 372.2g mi
2,1,2015	2		2015	7	5	16		25 250250	19	87NULL	21	0	0	0	0	00.160716	1 10.160716g mi
								025 250250					0				3
2,1,2015	2		2015	7	5	16			19	79NULL	21	0		0	0	00.148645	1 10.148645g mi
2,1,2015	2		2015	7	5	16		250250	19	66NULL	21	0	0	0	0	02.68E-05	1 12.68E-05g mi
2,1,2015	2		2015	7	5	16		250250	19	59NULL	21	0	0	0	0	07.71E-05	1 17.71E-05g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	19	58NULL	21	0	0	0	0	01.37E-05	1 11.37E-05g mi
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2,1,2015	2		2015	7	5	16		25 250250	19	56NULL	21	0	0	0	0	01.44E-06	1 11.44E-06g mi
2,1,2015	2		2015	7	5	16		25 250250	19	55NULL	21	0	0	0	0	06.11E-05	1 16.11E-05g mi
																	9
2,1,2015	2		2015	7	5	16		25 250250	19	54NULL	21	0	0	0	0	06.11E-06	1 16.11E-06g mi
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2,1,2015	2		2015	7	5	16		250250	19	52NULL	21	0	0	0	0	01.76E-06	1 11.76E-06g mi
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2,1,2015	2		2015	7	5	16		25 250250	19	36NULL	21	0	0	0	0	00.000117	1 10.000117g mi
2,1,2015	2		2015	7	5	16		25 250250	19	35NULL	21	0	0	0	0	01.23E-05	1 11.23E-05g mi
				7				025 250250					0		0		=
2,1,2015	2		2015		5	16			19	31NULL	21	0		0		00.007387	
2,1,2015	2		2015	7	5	16		25 250250	19	5NULL	21	0	0	0	0	00.003355	1 10.003355g mi
2,1,2015	2		2015	7	5	16		250250	19	3NULL	21	0	0	0	0	00.202716	1 10.202716g mi
2,1,2015	2	1	2015	7	5	16	25 25	250250	19	2NULL	21	0	0	0	0	02.686214	1 12.686214g mi
2,1,2015	2		2015	7	5	16	25 25	250250	19	1NULL	21	0	0	0	0	0 0.152	1 1 0.152g mi
2,1,2015	2		2015	7	5	16		25 250250	18	122NULL	42	0	0	0	0	00.011881	10.8496980.013982g mi
2,1,2015	2		2015	7	5	16		25 250250	18	121NULL	42	0	0	0	0	00.004401	10.849698 0.00518q mi
-1-1-013					,	-0	-5 25		20	TOLL	14	Ŭ	v	·	Ŭ	00.001101	III



2,1,2015	2	1	2015	7	5	16			250250	18	119NULL	42	0	0	0	0		10.849698 0g mi	
2,1,2015	2	1	2015	7	5	16			250250	18	118NULL	42	0	0	0	0	0 0.08913	10.8496980.104896g mi	
2,1,2015	2	1	2015	7	5	16			250250	18	117NULL	42	0	0	0	0	00.003033	10.8496980.003569g mi	
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2,1,2015	2	1	2015	7	5	16			250250	18	115NULL	42	0	0	0	0	00.007323	10.8496980.008618g mi	
2,1,2015	2	1	2015	7	5	16			250250	18	112NULL	42	0	0	0	0	00.098904	10.849698 0.1164g mi	
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2,1,2015	2	1	2015	7	5	16			250250	18	90NULL	42	0	0	0	0	0 1037.02	10.8496981220.457g mi	
2,1,2015	2 2	1 1	2015 2015	7 7	5 5	16 16			250250	18 18	87NULL	42	0	0	0	0	00.562511	10.8496980.662013g mi	
2,1,2015 2,1,2015	2	1	2015	7	5	16			250250 250250	18	79NULL 66NULL	42 42	0	0	0	0	00.499255 0 9.4E-05	10.8496980.587567g mi	
2,1,2015	2	1	2015	7	5	16			250250	18	59NULL	42	0	0	0	0	00.000548	10.8496980.000111g mi 10.8496980.000645g mi	
2,1,2015	2	1	2015	7	5	16			250250	18	58NULL	42	0	0	0	0	00.000348	10.8496980.000645g mi 10.8496980.000283g mi	
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2,1,2015	2	1	2015	7	5	16			250250	18	31NULL	42	0	0	0	0	00.009005	10.8496980.010597g mi	
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2,1,2015	2	1	2015	7	5	16			250250	17	116NULL	31	0	0	0	0	00.007326	1 10.007326g mi	
2,1,2015	2	1	2015	7	5	16			250250	17	115NULL	31	0	0	0	0	00.000231	1 10.000231g mi	
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2,1,2015	2	1	2015	7	5	16			250250	17	111NULL	31	0	0	0	0	00.003157	1 10.003157g mi	
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2,1,2015	2	1	2015	7	5	16			250250	17	79NULL	31	0	0	0	0	00.154494	1 10.154494g mi	
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2,1,2015	2	1	2015	7	5	16			250250	17	58NULL	31	0	0	0	0	01.77E-05	1 11.77E-05g mi	
2,1,2015	2	1	2015	7	5	16			250250	17 17	57NULL	31	0	0	0	0	02.15E-05	1 12.15E-05g mi	
2,1,2015	2	1 1	2015 2015	7 7	5 5	16 16			250250	17 17	56NULL 55NULL	31 31	0	0	0	0	01.93E-06	1 11.93E-06g mi 1 1 8.1E-05g mi	
2,1,2015					-				250250				•		•	-	0 8.1E-05	3	
2,1,2015 2,1,2015	2	1	2015	7 7	5 5	16 16			250250	17 17	54NULL	31 31	0	0	0	0	07.63E-06	1 17.63E-06g mi	
2,1,2015	2 2	1 1	2015 2015	7	5	16 16			250250 250250	17 17	53NULL 52NULL	31 31	0	0	0	0	04.77E-06 03.53E-06	1 14.77E-06g mi 1 13.53E-06g mi	
2,1,2015	2	1	2015	7	5	16			250250	17	52NULL 51NULL	31	0	0	0	0	03.53E-06 0 8.3E-06	1 18.3E-06g mi	
2,1,2015	2	1	2015	7	5	16			250250	17	36NULL	31	0	0	0	0	00.000148	1 18.3E-06g mi 1 10.000148g mi	
2,1,2015	2	1	2015	7	5	16			250250	17	35NULL	31	0	0	0	0	01.88E-05	1 11.88E-05g mi	
2,1,2015	2	1	2015	7	5	16			250250	17	31NULL	31	0	0	0	0	0 0.01088	1 10.01088g mi	
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2,1,2015	2	1	2015	7	5	16			250250	16	118NULL	21	0	0	0	0	00.003753	1 10.003753g mi	
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2,1,2015	2	1	2015	7	5	16			250250	16	100NULL	21	0	0	0	0	00.004965	1 10.004965g mi	



2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	91NULL	21	0	0	0	0	00.005499	1 10.005499g mi
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2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	79NULL	21	0	0	0	0	00.157493	1 10.157493g mi
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2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	59NULL	21	0	0	0	0	08.35E-05	1 18.35E-05g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	58NULL	21	0	0	0	0	01.48E-05	1 11.48E-05g mi
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2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	55NULL	21	0	0	0	0	06.61E-05	1 16.61E-05g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	54NULL	21	0	0	0	0	06.61E-06	1 16.61E-06g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	53NULL	21	0	0	0	0		1 1 3.9E-06g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	52NULL	21	0	0	0	0		1 11.9E-06g mi
2,1,2015	2	1 2015 1 2015	7 7	5 5	16 16	25 25025 250250 25 25025 250250	16 16	51NULL	21	0	0	0	0	04.86E-06	1 14.86E-06g mi 1 10.000127g mi
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2,1,2015	2	1 2015	7	5	16	25 25025 250250	16	1NULL	21	0	0	0	0		1 1 0.16108g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	122NULL	42	0	0	0	0	0 0.0143	10.8496980.016829g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	121NULL	42	0	0	0	0	00.005307	10.8496980.006246g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	119NULL	42	0	0	0	0		0.849698 0g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	118NULL	42	0	0	0	0	00.106204	10.849698 0.12499g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	117NULL	42	0	0	0	0	00.003267	10.8496980.003845g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	116NULL	42	0	0	0	0	00.026425	10.8496980.031099g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	115NULL	42	0	0	0	0	00.007735	10.8496980.009103g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	112NULL	42	0	0	0	0	00.089776	10.8496980.105656g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	111NULL	42	0	0	0	0	00.071499	10.8496980.084146g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	110NULL	42	0	0	0	0	0 0.19598	10.8496980.230647g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	107NULL	42	0	0	0	0	00.021781	10.8496980.025633g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	106NULL	42	0	0	0	0	00.211401	10.8496980.248795g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	100NULL	42	0	0	0	0	00.213022	10.8496980.250703g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	91NULL	42	0	0	0	0	00.013181	10.8496980.015512g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	90NULL	42	0	0	0	0	0 1024.36	10.8496981205.558g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	87NULL	42	0	0	0	0	00.647831	10.8496980.762425g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	79NULL	42	0	0	0	0	00.574712	10.8496980.676372g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	66NULL	42	0	0	0	0	00.000118	10.8496980.000138g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	59NULL	42	0	0	0	0	00.000655	10.8496980.000771g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	58NULL	42	0	0	0	0	00.000289	10.8496980.000341g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	57NULL	42	0	0	0	0	00.001063	10.849698 0.00125g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	56NULL	42	0	0	0	0	04.29E-05	10.8496985.05E-05g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	55NULL	42	0	0	0	0	00.001706	10.8496980.002008g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	54NULL	42	0	0	0	0	06.34E-05	10.8496987.47E-05g mi
2,1,2015	2	1 2015	7 7	5	16	25 25025 250250	15	53NULL	42	0	0	0	0	09.69E-05	10.8496980.000114g mi
2,1,2015	2	1 2015 1 2015	7	5 5	16	25 25025 250250 25 25025 250250	15 15	52NULL 51NULL	42	0	0	0	0	00.000226	10.8496980.000266g mi
2,1,2015	2				16				42	0				00.000621	10.849698 0.00073g mi
2,1,2015 2,1,2015	2	1 2015 1 2015	7 7	5 5	16 16	25 25025 250250 25 25025 250250	15 15	36NULL	42 42	0	0	0	0	0 0.00173	10.8496980.002035g mi 10.8496980.001025g mi
2,1,2015	2	1 2015	7	5 5	16	25 25025 250250	15	35NULL 31NULL	42	0	0	0	0	00.000871 00.008895	10.8496980.001025g mi 10.8496980.010468g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	5NULL	42	0	0	0	0	00.008893	10.8496980.035043g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	3NULL	42	0	0	0	0		10.8496986.279196q mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	2NULL	42	0	0	0	0	02.176459	10.849698 2.56145q mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	15	1NULL	42	0	0	0	0	00.604487	10.8496980.711414q mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	122NULL	31	0	0	0	0	00.000787	1 10.000787g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	121NULL	31	0	0	0	0	00.000319	1 10.000319g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	119NULL	31	0	0	0	0	0 0 1	1 0g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	118NULL	31	0	0	0	0	00.005833	1 10.005833g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	117NULL	31	0	0	0	0	00.001946	1 10.001946g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	116NULL	31	0	0	0	0	00.008266	1 10.008266g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	115NULL	31	0	0	0	0	00.000286	1 10.000286g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	112NULL	31	0	0	0	0	0 0.00191	1 1 0.00191g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	111NULL	31	0	0	0	0	00.003933	1 10.003933g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	110NULL	31	0	0	0	0	00.007743	1 10.007743g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	107NULL	31	0	0	0	0	00.012972	1 10.012972g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	106NULL	31	0	0	0	0	00.066126	1 10.066126g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	100NULL	31	0	0	0	0	00.008673	1 10.008673g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	91NULL	31	0	0	0	0	00.008187	1 10.008187g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	90NULL	31	0	0	0	0	0 621.164	1 1 621.164g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	87NULL	31	0	0	0	0	00.177606	1 10.177606g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	79NULL	31	0	0	0	0	00.168937	1 10.168937g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	66NULL	31	0	0	0	0	04.12E-05	1 14.12E-05g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	59NULL	31	0	0	0	0	00.000118	1 10.000118g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	58NULL	31	0	0	0	0		1 12.2E-05g mi
2,1,2015	2	1 2015	7	5	16	25 25025 250250	14	57NULL	31	0	0	0	0	02.72E-05	1 12.72E-05g mi
2,1,2015	2	1 2015	7 7	5	16 16	25 25025 250250 25 25025 250250	14 14	56NULL	31 31	0	0	0	0	0 2.4E-06 00.000101	1 1 2.4E-06g mi
2,1,2015	2	1 2015	7	5 5	16		14	55NULL	31	0			0		1 10.000101g mi 1 19.44E-06a mi
2,1,2015	2	1 2015	/	5	16	25 25025 250250	14	54NULL	31	0	0	0	U	09.44E-06	1 19.44E-06g mi



2.2015 2 1 2015 7 5 18 22 2015																	
1.2005 2 1 2005 7 5 5 6 25 25025 25025 14 5 1 1 1 1 1 1 1 1 1	2,1,2015	2	1	2015	7	5	16	25 25025 2502	50 14	53NULL	31	0	0	0	0	05.94E-06	1 15.94E-06g mi
2.10016 2 1 2015 7 5 5 6 25 2002 2002 1 3004UL 31 0 0 0 0 0 0 0 0 0																	3
2.10016 2 1 2015 7 5 5 6 25 2002 2002 1 3004UL 31 0 0 0 0 0 0 0 0 0												0		0	0		9
2.1.0015 2 1 2015 7 5 16 25 2015			1			5	16					0	0	0	0		3
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2,2015 2 1 2015 7 5 16 25 2015		2	1	2015	7	5	16	25 25025 2502	50 14	31NULL	31	0	0	0	0	00.012174	
2.12015 2 1 2015 7 5 16 25 2005 2015 14 1944 14 21 20 0 0 0 0 0 0 0 0	2,1,2015	2	1	2015	7	5	16	25 25025 2502	50 14	5NULL	31	0	0	0	0	00.007125	1 10.007125g mi
2.12015 2 1 2015 7 5 16 25 25 25 25 25 25 25 2	2,1,2015	2	1	2015	7	5	16	25 25025 2502	50 14	3NULL	31	0	0	0	0	00.332319	1 10.332319g mi
2.10015 2 1 2015 7 5 16 25 2002 20020 13 120NULL 21 0 0 0 0 0 0 0 0 0	2,1,2015	2	1	2015	7	5	16	25 25025 2502	50 14	2NULL	31	0	0	0	0	04.159496	1 14.159496g mi
2.10015 2 1 2015 7 5 16 25 25 25 25 25 25 25 2	2,1,2015	2	1	2015	7	5	16	25 25025 2502	50 14	1NULL	31	0	0	0	0	00.176061	1 10.176061g mi
2,2005 2 1 2015 7 5 16 25 2005 2005 31 INNUL 21 0 0 0 0 0 0 0 0 0	2,1,2015	2	1	2015	7	5	16			122NULL	21	0	0	0	0	0 0.00064	1 1 0.00064g mi
2,2005 2 1 2015 7 5 16 25 25025 25025 31 19NULL 21 0 0 0 0 0 0 0 0 0	2,1,2015	2	1	2015		5	16	25 25025 2502	50 13	121NULL	21	0	0	0	0	00.000263	1 10.000263g mi
2,2005 2 1 2015 7 5 16 25 2005 2005 31 17NNLL 21 0 0 0 0 0 0 0 0 0	2,1,2015	2	1			5	16			119NULL	21	0	0	0	0	0 0	
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2.1,2015 2 1 2015 7 5 6 25 25025 250250 31 307NULL 21 0 0 0 0 0 0 0 0 0																	5
2.12015 2 1 2015 7 5 6 25 25025 250250 3 300NULL 21 0 0 0 0 0 0.0056226 1 1.0056226 mi																	=
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2.1.2015 2 1. 2015 7 5 16 2. 2025 2.5.2025 3.1 5 3.0.0																	5
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2.1.2015 2 1 2015 7 5 16 2 25005 25025 31 3 5 5 10 2 25005 25025 31 3 5 5 5 2 25005 25025 31 3 5 5 5 2 25005 25025 31 3 5 5 2 25005 25025 31 3 5 5 2 25005 25025 31 2 2 2 2 2 2 2 2 2																	5
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2.1.2015 2 1 2015 7 5 16 25 25025 25025 25025 31 3NULL 21 0 0 0 0 0 0 0 0 0												0		0	0		=
2.1.2.1015 2 1 2015 7 5 16 25 25025		2	1	2015	7	5	16	25 25025 2502	50 13	5NULL	21	0	0	0	0	00.004115	
						5	16	25 25025 2502	50 13		21	0	0	0	0	0 0.23999	
2.1.2.1015 2							16						0		0		1 13.402255g mi
2.1.2.1015 2	2,1,2015	2	1			5	16	25 25025 2502		1NULL	21	0	0	0	0	00.174717	1 10.174717g mi
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2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 91NULL 42 0 0 0 0 0.027416 10.8496980.05193g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 91NULL 42 0 0 0 0 0.0012909 10.8496980.015193g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 91NULL 42 0 0 0 0 0 0.0012909 10.8496980.015193g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.079034 10.8496980.99783g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.079034 10.8496980.929783g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0700473 10.8496980.924737g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000157 10.8496980.000184g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000157 10.8496980.000184g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000157 10.8496980.000184g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000133 10.849698.0000436g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000371 10.8496980.000436g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000136 10.849698.000436g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.000136 10.8496980.001607g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0001288 10.849698.000575g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000128 10.8496980.000164g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000124 10.8496980.000344g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 9NNULL 42 0 0 0 0 0 0.0000124 10.8496980.000344g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 3NNULL 42 0 0 0 0 0 0.0000121 10.8496980.000344g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 3NNULL 42 0 0 0 0 0 0.0000711 10.8496980.000344g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 3NNULL 42 0 0 0 0 0 0.0000711 10.8496980.000344g mi 2,1,2015 2 1, 2015 7, 5 16 25 25025 250250 12 3NNULL 42 0 0 0 0 0 0.0000711 10.8496980.000349g mi												-	-	-	-		5
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2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 90NULL 42 0 0 0 0 0.0103.26 10.8496981180.725g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 87NULL 42 0 0 0 0 0.079034 10.8496980.929783g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 79NULL 42 0 0 0 0 0.0700473 10.8496980.824379g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 66NULL 42 0 0 0 0 0.0700473 10.8496980.824379g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 66NULL 42 0 0 0 0 0 0.00000157 10.8496980.824379g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0000157 10.8496980.000184g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0000371 10.8496980.000184g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 58NULL 42 0 0 0 0 0 0.0000371 10.8496980.000184g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0000371 10.8496980.00167g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0001366 10.8496980.00167g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0001366 10.8496980.00167g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0001368 10.8496980.002575g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 56NULL 42 0 0 0 0 0 0.0001248 10.8496980.002575g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 58NULL 42 0 0 0 0 0 0.0000276 10.8496980.00324g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 58NULL 42 0 0 0 0 0 0.0000276 10.8496980.00324g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 58NULL 42 0 0 0 0 0 0.0000276 10.8496980.00324g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 58NULL 42 0 0 0 0 0 0.0000276 10.8496980.00324g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 38NULL 42 0 0 0 0 0 0.0000276 10.8496980.00324g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 38NULL 42 0 0 0 0 0 0.0000276 10.8496980.00324g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 3NULL 42 0 0 0 0 0 0.0000276 10.8496980.00334g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 3NULL 42 0 0 0 0 0 0.0000276 10.8496980.00334g mi 2,1,2015 2 1 2015 7 5 16 25 25025 250250 12 3NULL 4																	
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					7	5	16	25 25025 2502	50 <u>1</u> 1		31	0	0	0	0	00.000891	1 10.000891g mi



2,1,2015	2	1 2015		5	16		25 250250	11	121NULL	31	0	0	0	0	0 0.00036	1	1 0.00036g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	119NULL	31	0	0	0	0		1 1	-		
2,1,2015	2	1 2015		5	16		25 250250	11	118NULL	31	0	0	0	0	00.006612	1	10.006612g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	117NULL	31	0	0	0	0	00.002097	1	10.002097g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	116NULL	31	0	0	0	0	00.009857	1	10.009857g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	115NULL	31	0	0	0	0	00.000333	1	10.000333g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	112NULL	31	0	0	0	0	00.002152	1	10.002152g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	111NULL	31	0	0	0	0	00.004456	1	10.004456g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	110NULL	31	0	0	0	0	00.008764	1	10.008764g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	107NULL	31	0	0	0	0	00.013977	1	10.013977g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	106NULL	31	0	0	0	0	00.078854	1	10.078854g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	100NULL	31	0	0	0	0	00.009808	1	10.009808g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	91NULL	31	0	0	0	0	00.009524	1	10.009524g	mi :	
2,1,2015	2	1 2015		5 5	16		25 250250	11	90NULL	31	0	0	0	0	0 722.633 00.197714	1	1 722.633g	mi :	
2,1,2015 2,1,2015	2	1 2015 1 2015	7 7	5	16 16		25 250250 25 250250	11 11	87NULL 79NULL	31 31	0	0	0	0	00.197714	1 1	10.197714g 10.188228g	mi mi	
2,1,2015	2	1 2015		5	16		25 250250	11	66NULL	31	0	0	0	0	05.49E-05	1	15.49E-05g	mi mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	59NULL	31	0	0	0	0	0 0.00013	1	1 0.00013g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	58NULL	31	0	0	0	0	02.47E-05	1	12.47E-05g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	57NULL	31	0	0	0	0	0 3.2E-05	1	1 3.2E-05g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	56NULL	31	0	0	0	0	02.72E-06	1	12.72E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	55NULL	31	0	0	0	0	00.000114	1	10.000114g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	54NULL	31	0	0	0	0	01.05E-05	1	11.05E-05g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	53NULL	31	0	0	0	0	0 6.7E-06	1	1 6.7E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	52NULL	31	0	0	0	0	05.39E-06	1	15.39E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	51NULL	31	0	0	0	0	01.29E-05	1	11.29E-05g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	11	36NULL	31	0	0	0	0	00.000204	1	10.000204g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	35NULL	31	0	0	0	0	02.77E-05	1	12.77E-05g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	31NULL	31	0	0	0	0	00.014167	1	10.014167g	mi	
2,1,2015	2	1 2015		5	16		25 250250	11	5NULL	31	0	0	0	0	00.007874	1	10.007874g	mi	
2,1,2015	2	1 2015	7	5	16	25 2502	25 250250	11	3NULL	31	0	0	0	0	00.360609	1	10.360609g	mi	
2,1,2015	2	1 2015	7	5	16	25 2502	25 250250	11	2NULL	31	0	0	0	0	04.661911	1	14.661911g	mi	
2,1,2015	2	1 2015	7	5	16	25 2502	25 250250	11	1NULL	31	0	0	0	0	00.196102	1	10.196102g	mi	
2,1,2015	2	1 2015	7	5	16	25 2502	25 250250	10	122NULL	21	0	0	0	0	00.000735	1	10.000735g	mi	
2,1,2015	2	1 2015	7	5	16	25 2502	25 250250	10	121NULL	21	0	0	0	0	00.000302	1	10.000302g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	119NULL	21	0	0	0	0		1 1			
2,1,2015	2	1 2015		5	16		25 250250	10	118NULL	21	0	0	0	0	00.005407	1	10.005407g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	117NULL	21	0	0	0	0	00.002071	1	10.002071g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	116NULL	21	0	0	0	0	00.008887	1	10.008887g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	115NULL	21	0	0	0	0	00.000206	1	10.000206g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	112NULL	21	0	0	0	0	00.000922	1	10.000922g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	111NULL	21	0	0	0	0	00.003676	1	10.003676g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	10	110NULL	21	0	0	0	0	00.006329	1	10.006329g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	107NULL	21	0	0	0	0	00.013807	1	10.013807g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	106NULL	21	0	0	0	0	00.071098	1	10.071098g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	100NULL	21	0	0	0	0	00.007152	1	10.007152g	mi	
2,1,2015	2	1 2015 1 2015		5	16		25 250250	10	91NULL	21	0	0	0	0	00.007276	1	10.007276g	mi mi	
2,1,2015	2		7 7	5	16		25 250250	10	90NULL	21	0	0	0	0	0 551.79	1	1 551.79g 10.203206g	mi mi	
2,1,2015	2	1 2015 1 2015		5 5	16 16		25 250250 25 250250	10 10	87NULL 79NULL	21 21	0	0 0	0	0	00.203206	1 1	10.203206g 10.189125g	mı mi	
2,1,2015 2,1,2015	2	1 2015	7	5	16		25 250250 25 250250	10	66NULL	21	0	0	0	0	00.189125 05.37E-05	1	10.189125g 15.37E-05g	mi mi	
2,1,2015	2	1 2015	7	5	16		25 250250	10	59NULL	21	0	0	0	0	05.37E-05 0 0.00012	1	1 0.00012g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	58NULL	21	0	0	0	0	02.14E-05	1	12.14E-05g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	57NULL	21	0	0	0	0	02.14E-05 02.15E-05	1	12.14E-05g 12.15E-05g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	56NULL	21	0	0	0	0	02.13E-03 02.25E-06	1	12.15E-05g 12.25E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	55NULL	21	0	0	0	0	09.52E-05	1	19.52E-05g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	54NULL	21	0	0	0	0	09.53E-06	1	19.53E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	53NULL	21	0	0	0	0	05.62E-06	1	15.62E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	52NULL	21	0	0	0	0	02.73E-06	1	12.73E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	51NULL	21	0	0	0	0	06.99E-06	1	16.99E-06g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	36NULL	21	0	0	0	0	00.000183	1	10.000183g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	35NULL	21	0	0	0	0	01.91E-05	1	11.91E-05g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	31NULL	21	0	0	0	0	00.010952	1	10.010952g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	5NULL	21	0	0	0	0	00.004613	1	10.004613g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	3NULL	21	0	0	0	0	00.257899	1	10.257899g	mi	
2,1,2015	2	1 2015		5	16		25 250250	10	2NULL	21	0	0	0	0	0 3.8374	1		ni	
2,1,2015	2	1 2015	7	5	16		25 250250	10	1NULL	21	0	0	0	0	00.193738	1	10.193738g	mi	
2,1,2015	2	1 2015	7	5	16		25 250250	9	122NULL	42	0	0	0	0	00.032626		496980.038397		
2,1,2015	2	1 2015		5	16	25 2502	25 250250	9	121NULL	42	0	0	0	0	00.012126	10.8	3496980.014271	g mi	
2,1,2015	2	1 2015		5	16		25 250250	9	119NULL	42	0	0	0	0		10.8496			
2,1,2015	2	1 2015		5	16		25 250250	9	118NULL	42	0	0	0	0	00.240396		3496980.282919	_	
2,1,2015	2	1 2015		5	16		25 250250	9	117NULL	42	0	0	0	0	00.003791	10.8	496980.004462	g mi	
2,1,2015	2	1 2015		5	16		25 250250	9	116NULL	42	0	0	0	0	00.053606		3496980.063089	_	
2,1,2015	2	1 2015		5	16		25 250250	9	115NULL	42	0	0	0	0	00.015718		496980.018499	_	
2,1,2015	2	1 2015		5	16		25 250250	9	112NULL	42	0	0	0	0	00.154329		496980.181628	_	
2,1,2015	2	1 2015		5	16		25 250250	9	111NULL	42	0	0	0	0	00.163131		496980.191987		
2,1,2015	2	1 2015		5	16		25 250250	9	110NULL	42	0	0	0	0	00.394725		3496980.464547		
2,1,2015	2	1 2015		5	16		25 250250	9	107NULL	42	0	0	0	0	00.025276		3496980.029747	_	
2,1,2015	2	1 2015	7	5	16	25 2502	25 250250	9	106NULL	42	0	0	0	0	0 0.42885	10.8	496980.504709	g mi	



2,1,2015	2	1 201	.5	7	5	16	25	25025	250250	9	100NULL	42	0	0	0	0	00.429051	10.	8496980.504945g mi	
2,1,2015	2	1 201	.5	7	5	16	25	25025	250250	9	91NULL	42	0	0	0	0	00.025897	10.8	3496980.030478g mi	
2,1,2015	2	1 201	.5	7	5	16	25	25025	250250	9	90NULL	42	0	0	0	0	0 2012.62	10.8	49698 2368.63g mi	
2,1,2015	2	1 201		7	5	16	25	25025	250250	9	87NULL	42	0	0	0	0	01.378036	10.8	3496981.621795g mi	
2,1,2015	2	1 201		7	5	16	25	25025	250250	9	79NULL	42	0	0	0	0	01.222067	10.8	3496981.438237g mi	
2,1,2015	2	1 201		7	5	16	25	25025	250250	9	66NULL	42	0	0	0	0	00.000235	10.8	3496980.000277g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	59NULL	42	0	0	0	0	00.001486		3496980.001749g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	58NULL	42	0	0	0	0	0 0.00066		496980.000777g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	57NULL	42	0	0	0	0	00.002429		3496980.002859g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	56NULL	42	0	0	0	0	09.78E-05		496980.000115g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	55NULL	42	0	0	0	0	00.003893		3496980.004582g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	54NULL	42	0	0	0	0	00.000142		3496980.000168g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	53NULL	42	0	0	0	0	00.000221		349698 0.00026g mi	
2,1,2015	2	1 201		7	5 5	16	25		250250	9	52NULL	42	0	0	0	0	00.000497 00.001419		3496980.000585g mi	
2,1,2015 2,1,2015	2 2	1 201 1 201		7 7	5	16 16	25 25		250250 250250	9	51NULL 36NULL	42 42	0	0	0	0	00.001419		349698 0.00167g mi 3496980.004657g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	35NULL	42	0	0	0	0	00.003937		•	
2,1,2015	2	1 201		7	5	16	25		250250	9	31NULL	42	0	0	0	0	00.001333		3496980.002345g mi 3496980.020567g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	5NULL	42	0	0	0	0	00.017470		496980.076066g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	3NULL	42	0	0	0	0	010.54976		4969812.41589g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	2NULL	42	0	0	0	0	04.464046		496985.253685g mi	
2,1,2015	2	1 201		7	5	16	25		250250	9	1NULL	42	0	0	0	0	01.286705		496981.514309g mi	
2,1,2015	2	1 201		, 7	5	16	25		250250	8	122NULL	31	0	0	0	0	00.001008	1	10.001008g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	121NULL	31	0	0	0	0	00.000405	1	10.000405g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	119NULL	31	0	0	0	0	0 0 1		3	
2,1,2015	2	1 201		7	5	16	25		250250	8	118NULL	31	0	0	0	0	00.007491	1	10.007491g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	117NULL	31	0	0	0	0	00.002259	1	10.002259g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	116NULL	31	0	0	0	0	00.013053	1	10.013053g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	115NULL	31	0	0	0	0	00.000401	1	10.000401g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	112NULL	31	0	0	0	0	00.002478	1	10.002478g mi	
2,1,2015	2	1 201	.5	7	5	16	25	25025	250250	8	111NULL	31	0	0	0	0	0 0.00504	1	1 0.00504g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	110NULL	31	0	0	0	0	0 0.00997	1	1 0.00997g mi	
2,1,2015	2	1 201		7	5	16	25	25025	250250	8	107NULL	31	0	0	0	0	00.015057	1	10.015057g mi	
2,1,2015	2	1 201		7	5	16			250250	8	106NULL	31	0	0	0	0	00.104427	1	10.104427g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	100NULL	31	0	0	0	0	00.011133	1	10.011133g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	91NULL	31	0	0	0	0	00.012133	1	10.012133g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	90NULL	31	0	0	0	0	0 920.552	1	1 920.552g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	87NULL	31	0	0	0	0	00.235213	1	10.235213g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	79NULL	31	0	0	0	0	00.223961	1	10.223961g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	66NULL	31	0	0	0	0	08.24E-05	1	18.24E-05g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	59NULL	31	0	0	0	0	0 0.00014	1	1 0.00014g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	58NULL	31	0	0	0	0	02.74E-05	1	12.74E-05g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	57NULL	31	0	0	0	0	03.89E-05	1	13.89E-05g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	56NULL	31	0	0	0	0	03.07E-06	1	13.07E-06g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	55NULL	31	0	0	0	0	00.000128	1	10.000128g mi	
2,1,2015	2	1 201		7	5	16 16	25		250250	8	54NULL	31	0	0	0	0	01.13E-05	1	11.13E-05g mi	
2,1,2015	2	1 201 1 201		7 7	5	16 16	25		250250 250250	8 8	53NULL	31	0	0	0	0	07.53E-06	1	17.53E-06g mi	
2,1,2015	2			<i>7</i>	5	16 16	25		250250	8	52NULL	31	0	0	0	0	0 6.9E-06	1	1 6.9E-06g mi	
2,1,2015 2,1,2015	2 2	1 201 1 201		/ 7	5 5	16 16	25 25		250250 250250	8	51NULL 36NULL	31 31	0	0	0	0	01.66E-05 00.000223	1 1	11.66E-05g mi 10.000223g mi	
2,1,2015	2	1 201		7	5	16	25 25		250250	8	35NULL	31	0	0	0	0	00.000223 03.34E-05	1	3	
2,1,2015	2	1 201		7	5 5	16	25		250250	8	31NULL	31	0	0	0	0	00.018053	1	13.34E-05g mi 10.018053g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	5NULL	31	0	0	0	0	00.018033	1	10.009044g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	3NULL	31	0	0	0	0	00.414301	1	10.414301g mi	
2,1,2015	2	1 201		7	5	16			250250	8	2NULL	31	0	0	0	0	05.268094	1	15.268094g mi	
2,1,2015	2	1 201		7	5	16	25		250250	8	1NULL	31	0	0	0	0	00.233005	1	10.233005g mi	
2,1,2015	2	1 201		7	5	16	25		250250	7	122NULL	21	0	0	0	0	00.000853	1	10.000853g mi	
2,1,2015	2	1 201		7	5	16			250250	7	121NULL	21	0	0	0	0	0 0.00035	1	1 0.00035g mi	
2,1,2015	2	1 201		7	5	16	25		250250	7	119NULL	21	0	0	0	0	0 0 1			
2,1,2015	2	1 201		7	5	16	25		250250	7	118NULL	21	0	0	0	0	00.006273	1	10.006273g mi	
2,1,2015	2	1 201		7	5	16			250250	7	117NULL	21	0	0	0	0	00.002231	1	10.002231g mi	
2,1,2015	2	1 201		7	5	16			250250	7	116NULL	21	0	0	0	0	00.011707	1	10.011707g mi	
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2,1,2015	2	1 201		7	5	16	25		250250	7	112NULL	21	0	0	0	0	0 0.00107	1	1 0.00107g mi	
2,1,2015	2	1 201		7	5	16	25		250250	7	111NULL	21	0	0	0	0	00.004264	1	10.004264g mi	
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2,1,2015	2	1 201		7	5	16			250250	7	87NULL	21	0	0	0	0	00.240286	1	10.240286g mi	
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2,1,2015	2	1 201		7	5	16			250250	7	59NULL	21	0	0	0	0	0 0.00014	1	1 0.00014g mi	
2,1,2015	2	1 201		7	5	16			250250	7	58NULL	21	0	0	0	0	02.48E-05	1	12.48E-05g mi	
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2,1,2015	2	1 201	.5	7	5	16	25	25025	250250	7	55NULL	21	0	0	0	0	0 0.00011	1	1 0.00011g mi	



2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	7	54NULL	21	0	0	0	0	01.11E-05	1 11.11E-05g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	7	53NULL	21	0	0	0	0	06.52E-06	1 16.52E-06g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	7	52NULL	21	0	0	0	0		1 13.17E-06g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	7	36NULL	21	0	0	0	0	00.000212	1 10.000212g mi
2,1,2015	2	1 2015	7	5	16		5 250250	7	35NULL	21	0	0	0	0		1 12.22E-05g mi
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		1 2015	7	5	16			7			0	0		0		
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2,1,2015	2	1 2015	7	5	16		5 250250	7	1NULL	21	0	0	0	0		1 10.229571g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	6	121NULL	42	0	0	0	0	00.021871	10.849698 0.02574g mi
2,1,2015	2	1 2015	7	5	16		5 250250	6	119NULL	42	0	0	0	0		0.849698 0g mi
2,1,2015	2	1 2015	7	5	16		5 250250	6	118NULL	42	0	0	0	0	00.433913	10.8496980.510667g mi
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2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	6	116NULL	42	0	0	0	0	00.104596	10.8496980.123098g mi
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2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	6	110NULL	42	0	0	0	0	00.717792	10.8496980.844761g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	6	90NULL	42	0	0	0	0		10.8496984203.176q mi
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2,1,2015	2	1 2015	7	5 5	16			6			0	0	0	0		-
				5			5 250250		79NULL	42			0		02.226244	10.8496982.620042g mi
2,1,2015	2	1 2015	7		16		5 250250	6	66NULL	42	0	0		0		10.8496980.000553g mi
2,1,2015	2	1 2015	7	5	16		5 250250	6	59NULL	42	0	0	0	0	00.002682	10.8496980.003156g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	6	56NULL	42	0	0	0	0	00.000176	10.8496980.000208g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	6	55NULL	42	0	0	0	0	00.007023	10.8496980.008265g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	6	54NULL	42	0	0	0	0	00.000257	10.8496980.000303g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	6	53NULL	42	0	0	0	0	00.000398	10.8496980.000469g mi
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2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	6	51NULL	42	0	0	0	0	00.002559	10.8496980.003012g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	6	2NULL	42	0	0	0	0		10.8496989.487384g mi
2,1,2015	2	1 2015	7	5	16		5 250250	6	1NULL	42	0	0	0	0		10.8496982.755964q mi
	2	1 2015	7	5	16		5 250250	5	122NULL	31	0	0	0	0	00.001359	3
2,1,2015								5								1 10.001359g mi
2,1,2015	2	1 2015	7	5	16		5 250250		121NULL	31	0	0	0	0	0 0.00054	1 1 0.00054g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	5	118NULL	31	0	0	0	0	0 0.01013	1 1 0.01013g mi
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2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	5	111NULL	31	0	0	0	0	00.006794	1 10.006794g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	5	110NULL	31	0	0	0	0	00.013587	1 10.013587g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	5	107NULL	31	0	0	0	0	00.016225	1 10.016225g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	106NULL	31	0	0	0	0	00.181144	1 10.181144g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	5	91NULL	31	0	0	0	0	00.019959	1 10.019959g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	90NULL	31	0	0	0	0		1 1 1514.3g mi
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			7	5			5 250250	5	66NULL		0		0	0		
2,1,2015	2				16					31		0				5
2,1,2015	2	1 2015	7	5	16		5 250250	5	59NULL	31	0	0	0	0		1 10.00017g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	58NULL	31	0	0	0	0		1 13.56E-05g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	57NULL	31	0	0	0	0		1 15.95E-05g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	56NULL	31	0	0	0	0		1 14.13E-06g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	5	54NULL	31	0	0	0	0		1 11.39E-05g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	53NULL	31	0	0	0	0		l 1 1E-05g mi
2,1,2015	2	1 2015	7	5	16	25 2502	5 250250	5	52NULL	31	0	0	0	0	01.14E-05	1 11.14E-05g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	51NULL	31	0	0	0	0		1 12.78E-05g mi
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2,1,2015	2	1 2015	7	5	16		5 250250	5	35NULL	31	0	0	0	0		1 15.06E-05g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	31NULL	31	0	0	0	0		1 10.029714g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	5NULL	31	0	0	0	0		1 10.012555g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	3NULL	31	0	0	0	0		1 10.575377g mi
2,1,2015	2	1 2015	7	5	16		5 250250	5	2NULL	31	0	0	0	0		1 17.08664g mi
	2	1 2015	7	5 5	16		5 250250	5	1NULL	31	0	0	0	0		3
2,1,2015	4	T Z0T2	/	5	ΤΩ.	23 2302	J ZJUZJU		TINULL	υL	U	U	U	U	00.343715	1 10.343715g mi



2,1,2015	2	1	2015	7	5	16	25 25	025 250250	4	122NULL	21	0	0	0	0	00.001206 1 10.001206g mi
2,1,2015	2	1	2015	7	5	16	25 2	025 250250	4	121NULL	21	0	0	0	0	00.000495 1 10.000495g mi
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2,1,2015	2	1	2015	7	5	16		025 250250	4	53NULL	21	0	0	0	0	09.22E-06 1 19.22E-06g mi
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2,1,2015 2,1,2015	2	1 1	2015 2015	7 7	5 5	16 16		025 250250 025 250250	4 4	51NULL 36NULL	21 21	0	0	0	0	01.14E-05 1 11.14E-05g mi 0 0.0003 1 1 0.0003g mi
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2,1,2015	2 2	1 1	2015 2015	7 7	5 5	16 16		025 250250	3	112NULL	42 42	0	0	0	0	00.343616 1 0NULL g mi
2,1,2015 2,1,2015	2	1	2015	7	5	16 16		025 250250 025 250250	3	111NULL 110NULL	42 42	0	0	0	0	0 1.31387 1 ONULL g mi 0 2.24794 1 ONULL g mi
2,1,2015	2	1	2015	7	5	16		i025 250250	3	107NULL	42	0	0	0	0	0 2.24794 1 0NULL g mi 0 0 1 0NULL g mi
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2,1,2015	2		2015	7	5	16		5025 250250	3	90NULL	42	0	0	0	0	0 7872.19 1 ONULL g mi
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2,1,2015	2		2015	7	5 5	16		025 250250 025 250250	3	54NULL	42 42	0	0	0	0	
2,1,2015	2	1	2015	7	5	16		025 250250 025 250250	3	52NULL	42	0	0	0	0	00.001773
2,1,2015	2		2015	7	5	16		025 250250	3	51NULL	42	0	0	0	0	00.011478 1 ONULL g mi
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Source: KBE and Massport.



Table F-6 AEDT 2b Inp	out File	
Study Input Report		
Study Information		
Report Date: 2/26/2016 2:11:52		
	ting2015_CMS_022516	
	ng2015_CMS_022516	
Study Type: NoiseAndEmissior Mass Units: Kilograms		
Mass Units: Kilograms Use Metric Units: No		
Study Database Information		
Study Database Version: 1.43.2		
Airport Layouts		
, and the second se	ARD LAWRENCE LOGAN INTL Default Layout	
•	RD LAWRENCE LOGAN INTL	
Airport Codes: BOS, BOS, KBOS		
Airport Description:		
Country: US		
State: MASSACHUSETTS		
City: BOSTON		
Latitude: 42.362972 degrees		
Longitude: -71.006417 degree	es .	
Elevation: 20 feet		
Runway: 04L/22R		
Length: 7860 feet		
Width: 150 feet Runway End: 04L		
Runway End: 04L Latitude:	42.357988 degrees	
Latitude: Longitude:	-71.014339 degrees	
Threshold Elevation:	-71.014559 degrees 0 feet	
Approach Displaced Threshold:	0 feet	
Departure Displaced Threshold:	0 feet	
Crossing Height:	50 feet	
Glide Slope:	3 deg	
Effective Date:	1/1/1900	
Expiration Date:	6/6/2079	
Percent Wind:	0%	
Runway End: 22R		
Latitude:	42.378290 degrees	
Longitude:	-71.004516 degrees	
Threshold Elevation:	15.1 feet	
Approach Displaced Threshold:	0 feet	
Departure Displaced Threshold:	815 feet	
Crossing Height:	50 feet	
Glide Slope:	3 deg	
Effective Date:	1/1/1900	



6/6/2079 Expiration Date: Percent Wind: 0% 04R/22L Runway: Length: 10005 feet Width: 150 feet Runway End: 42.351059 degrees Latitude: -71.011795 degrees Longitude: Threshold Elevation: 17.6 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 1154 feet 50 feet Crossing Height: Glide Slope: 3 deg Effective Date: 1/1/1900 Expiration Date: 6/6/2079 Percent Wind: 0% Runway End: Latitude: 42.376900 degrees Longitude: -70.999291 degrees Threshold Elevation: 15.5 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 1199 feet Crossing Height: 50 feet Glide Slope: 3 deg 1/1/1900 Effective Date: Expiration Date: 6/6/2079 Percent Wind: 0% 09/27 Runway: 7000 feet Length: Width: 150 feet Runway End: 09 42.355754 degrees Latitude: Longitude: -71.012894 degrees Threshold Elevation: 0 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 0 feet Crossing Height: 50 feet 3 deg Glide Slope: Effective Date: 1/1/1900 6/6/2079 Expiration Date: Percent Wind: 0% Runway End: 42.360217 degrees Latitude: Longitude: -70.987704 degrees Threshold Elevation: 0 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 0 feet Crossing Height: 50 feet Glide Slope: 3 deg Effective Date: 1/1/1900 6/6/2079 Expiration Date: Percent Wind:



14/32 Runway: Length: 5000 feet 150 feet Width: Runway End: Latitude: 42.356598 degrees Longitude: -71.023275 degrees Threshold Elevation: 0 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 0 feet Crossing Height: 50 feet Glide Slope: 3 deg 1/1/1900 Effective Date: 6/6/2079 Expiration Date: Percent Wind: 0% Runway End: 42.348600 degrees Latitude: -71.008246 degrees Longitude: Threshold Elevation: 0 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 0 feet Crossing Height: 50 feet Glide Slope: 3 deg Effective Date: 1/1/1900 Expiration Date: 6/6/2079 Percent Wind: 0% 15L/33R Runway: 2557 feet Length: Width: 150 feet 15L Runway End: 42.373579 degrees Latitude: -71.009127 degrees Longitude: Threshold Elevation: 0 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 0 feet Crossing Height: 50 feet Glide Slope: 3 deg Effective Date: 1/1/1900 6/6/2079 Expiration Date: Percent Wind: Runway End: 33R 42.368602 degrees Latitude: -71.002457 degrees Longitude: Threshold Elevation: 0 feet Approach Displaced Threshold: 0 feet Departure Displaced Threshold: 0 feet Crossing Height: 50 feet Glide Slope: 3 deg Effective Date: 1/1/1900 6/6/2079 Expiration Date: Percent Wind: 0% 15R/33L Runway: Length: 10082 feet



Width: 150 feet		
Runway End: 15R		
Latitude:		42.374271 degrees
Longitude:		-71.017891 degrees
Threshold Elevation:	17.2 feet	
Approach Displaced Threshold:	0 feet	
Departure Displaced Threshold:	881 feet	
Crossing Height:	50 feet	
Glide Slope:		3 deg
Effective Date:	1/1/1900	
Expiration Date:	6/6/2079	
Percent Wind:		0%
Runway End: 33L		
Latitude:		42.354651 degrees
Longitude:		-70.991587 degrees
Threshold Elevation:	0 feet	
Approach Displaced Threshold:	0 feet	
Departure Displaced Threshold:	0 feet	
Crossing Height:	50 feet	
Glide Slope:		3 deg
Effective Date:	1/1/1900	
Expiration Date:	6/6/2079	
Percent Wind:		0%
Gate: G-1		
Latitude: 42.370004		
Longitude: 288.992975		
Elevation: 0 feet		
Aircraft Size: ANY		
SigmaY0: n/a		
SigmaZ0: n/a		
Release Height: n/a		
Receptor Sets		
Annualizations		
Annualization: Root		
Description: Root		
Start Time: Thursday, February	25, 2016	
Duration: 1.00:00:00		
Air Performance Model: SAE_184	45_APM	
Altitude Cutoff: 10000		
Fuel Sulfur Content: 0.0007		
Sulfur Conversion Rate: 0.05		
Taxi Model: UserTaxiModel		
Use Bank Angle: True		
Airport Layouts: GENERAL EDWA	ARD LAWREN	CE LOGAN INTL Default Lav
Appualizations:		



Root	
Op group: Aircraft	
Description: Aircraft	
Source Type: SourceAircraft	
Start Time: 2/25/2016 12:00:00 AM	
Duration: 1.00:00:00	
Hourly Wx File:	
Annualization: Root1	
Description: Root1	
Start Time: Thursday, January 01, 2015	
Duration: 421.00:00:00	
Air Performance Model: SAE_1845_APM	
Altitude Cutoff: 10000	
Fuel Sulfur Content: 0.0007	
Sulfur Conversion Rate: 0.05	
Taxi Model: UserTaxiModel	
Use Bank Angle: True	
Airport Layouts: GENERAL EDWARD LAWRENCE LOGAN INTL Defaul	t Layout
Annualizations:	
Root1	
Op group: GSE	
Description: GSE	
Source Type: SourceAircraft	
Start Time: 1/1/2015 12:00:00 AM	
Duration: 421.00:00:00	
Hourly Wx File:	
Annualization: Root	
Op group Aircraft	
Child Case: Aircraft	
Description: Aircraft	
Start time: 00:00:00	
Duration: 01 days 00 hours	
Number of Operations: 28	
Appualization: Poet1	
Annualization: Root1	
Op group GSE	



Child Case: GSE Description: GSF Start time: 00:00:00 Duration: 421 days 00 hours Number of Operations: 0 User-Defined Aircraft Profiles Profile Aircraft: 757RRwithAPU Profile Name: STANDARD Operation Type: Arrival Stagelength: 1 Weight: 80830.1603339998 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 757RRwithAPU Profile Name: ICAO_A Operation Type: Departure Stagelength: 1 Weight: 83415.6368429998 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 757RRwithAPU Profile Name: ICAO_A Operation Type: Departure Stagelength: 2 Weight: 86726.8611439998 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 757RRwithAPU Profile Name: ICAO_A Operation Type: Departure Stagelength: 3 Weight: 90310.2408669998 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 757RRwithAPU Profile Name: ICAO_A Operation Type: Departure Stagelength: 4 Weight: 97613.0780239998 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 757RRwithAPU Profile Name: ICAO_A Operation Type: Departure Stagelength: 5 Weight: 106503.488476 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 757RRwithAPU Profile Name: ICAO_A Operation Type: Departure Stagelength: 6 Weight: 110313.664384 kg Arrival Delay Duration: 00:00:00



Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_A

Operation Type: Departure

Stagelength: 7

Weight: 115666.05435 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 1

Weight: 83415.6368429998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 2

Weight: 86726.8611439998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 3

Weight: 90310.2408669998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 4

Weight: 97613.0780239998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 5

Weight: 106503.488476 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 6

Weight: 110313.664384 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: ICAO_B

Operation Type: Departure

Stagelength: 7

Weight: 115666.05435 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 1



Weight: 83415.6368429998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 2

Weight: 86726.8611439998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 3

Weight: 90310.2408669998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 4

Weight: 97613.0780239998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 5

Weight: 106503.488476 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 6

Weight: 110313.664384 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 7

Weight: 115666.05435 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Circuit

Stagelength: 1

Weight: 75749.9257899998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 757RRwithAPU

Profile Name: STANDARD

Operation Type: Touch-and-Go

Stagelength: 1

Weight: 75749.9257899998 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD



Operation Type: Arrival

Stagelength: 1

Weight: 130634.60256 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 1

Weight: 120201.97805 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 2

Weight: 124964.697935 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 3

Weight: 129908.854768 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 4

Weight: 138663.187509 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 5

Weight: 149685.4821 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 6

Weight: 161433.524483 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 7

Weight: 166785.914449 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Circuit

Stagelength: 1

Weight: 120201.97805 kg

Arrival Delay Duration: 00:00:00



Profile Aircraft: 767300B767withAPU

Profile Name: STANDARD

Operation Type: Touch-and-Go

Stagelength: 1

Weight: 120201.97805 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: CVR580DashWithAPU

Profile Name: STANDARD

Operation Type: Arrival

Stagelength: 1

Weight: 21228.122916 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: CVR580DashWithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 1

Weight: 22226.02613 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: CVR580DashWithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 2

Weight: 24493.98798 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: CVR580DashWithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 3

Weight: 26308.3574599999 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: CVR580DashWithAPU

Profile Name: STANDARD

Operation Type: Circuit

Stagelength: 1

Weight: 22226.02613 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: CVR580DashWithAPU

Profile Name: STANDARD

Operation Type: Touch-and-Go

Stagelength: 1

Weight: 22226.02613 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD

Operation Type: Arrival

Stagelength: 1

Weight: 155128.59054 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 1



Weight: 155763.619858 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 2

Weight: 160208.825084 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 3

Weight: 165062.263443 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 4

Weight: 173544.440762 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 5

Weight: 184022.424509 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 6

Weight: 195089.62474463 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 7

Weight: 206792.761483 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 8

Weight: 219357.270132 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOA

Operation Type: Departure

Stagelength: 9

Weight: 227930.165925 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB



Operation Type: Departure

Stagelength: 1

Weight: 155763.619858 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 2

Weight: 160208.825084 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 3

Weight: 165062.263443 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 4

Weight: 173544.440762 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 5

Weight: 184022.424509 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 6

Weight: 195089.62474463 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 7

Weight: 206792.761483 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 8

Weight: 219357.270132 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: ICAOB

Operation Type: Departure

Stagelength: 9

Weight: 227930.165925 kg

Arrival Delay Duration: 00:00:00



Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 1

Weight: 155763.619858 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD
Operation Type: Departure

Stagelength: 2

Weight: 160208.825084 kg
Arrival Delay Duration: 00:00:00
Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 3

Weight: 165062.263443 kg
Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD
Operation Type: Departure

Stagelength: 4

Weight: 173544.440762 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD
Operation Type: Departure

Stagelength: 5

Weight: 184022.424509 kg Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD
Operation Type: Departure

Stagelength: 6

Weight: 195089.62474463 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 7

Weight: 206792.761483 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 8

Weight: 219357.270132 kg

Arrival Delay Duration: 00:00:00

Profile Aircraft: 7878RB787WithAPU

Profile Name: STANDARD

Operation Type: Departure

Stagelength: 9



Weight: 227930.165925 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 7878RB787WithAPU Profile Name: STANDARD Operation Type: Circuit Stagelength: 1 Weight: 155763.619858 kg Arrival Delay Duration: 00:00:00 Profile Aircraft: 7878RB787WithAPU Profile Name: STANDARD Operation Type: Touch-and-Go Stagelength: 1 Weight: 155763.619858 kg Arrival Delay Duration: 00:00:00 User-Specified Aircraft Substitutions _____ Metric Results Metric Result 1 Run Start Time: 2/26/2016 2:00:07 PM Run End Time: 2/26/2016 2:00:20 PM Run Status: Complete Run Options: RunOptions_Emissions Result Storage Options: Dispersion Results: None Emissions Results: Segment Noise Results: None Modeling Options: Ambient: False Ambient Screening: False Analysis Year (VALE): Apply Delay & Sequencing Model On Taxi: False Calculate Aircraft Engine Startup Emissions: True Calculate Speciated Organic Gases: False Atmospheric Absorption: 0 Delta Ambient: 0 Do Fixed Ambient Threshold: False Fill Terrain: False Fixed Ambient Threshold: 65 $Lateral\ Attenuation:\ Apply Lateral\ Attenuation ToProps And Helos$ Noise Line Of Sight Blockage: False Terrain: False Terrain Fill In Value: Track Angle Checking: False Type Of Ground: Hard Annualization: Root Metric Result 2 Run Start Time: 2/26/2016 2:00:09 PM



Run End Time: 2/26/2016 2:00:19 PM

Run Status: Complete

Run Options: RunOptions_Fuel Consumption

Result Storage Options:
Dispersion Results: None
Emissions Results: None
Noise Results: None
Modeling Options:
Ambient: False

Ambient Screening: False Analysis Year (VALE):

Apply Delay & Sequencing Model On Taxi: False Calculate Aircraft Engine Startup Emissions: False Calculate Speciated Organic Gases: False

Atmospheric Absorption: 0

Delta Ambient: 0

Do Fixed Ambient Threshold: False

Fill Terrain: False

Fixed Ambient Threshold: 65

 $Lateral\ Attenuation:\ Apply Lateral Attenuation To Props And Helos$

Noise Line Of Sight Blockage: False

Terrain: False
Terrain Fill In Value:
Track Angle Checking: False
Type Of Ground: Hard
Annualization: Root1

Source: KBE and Massport.



Operation	Group	Mode	Fuel (ST)	Distance (mi)	Duration	CO (ST)	HC (ST)	TOG (ST)	VOC (ST)	NMHC (ST)	NOx (ST)	PMNV (ST)	
	PMSO (ST)	PMFO (ST)	CO2 (ST)	H2O (ST)	SOx (ST)	PM 2·5 (ST)	PM 10 (ST)						
Aircraft	Startup	0	0	0.00:00	0	9.387	10.85356	10.79697	10.85356	0	0	0	0
	0	0	0	0	0								
Aircraft	ClimbTaxi	1404.36978	0	33:08.0	27.81761	2.60118	3.00758	2.99189	3.00758	6.75001	0.01164	0.09473	
	0.04263	4430.78666	1737.20542	1.81445	0.149	0.149							
Aircraft	ClimbGroun	d 6186.35756	23214.75	42:47.8	28.80243	12.16246	14.06265	13.98932	14.06265	149.29261	0.12069	0.59266	
	0.12838	19517.95812	7652.52431	7.99277	0.85297	0.85297							
Aircraft	ClimbBelow	1000	8624.81502	47202.38	47:35.8	29.2996	12.24866	14.16232	14.08847	14.16232	221.34598	0.17699	
	0.84656	0.17435	27211.29138	10668.89618	11.14326	1.21491	1.21491						
Aircraft	ClimbBelowl	MixingHeight	15213.94049	143366.43	03:05.7	30.7402	12.47061	14.41895	14.34376	14.41895	386.91206	0.34106	
	1.51971	0.27096	47999.98224	18819.64438	19.65641	2.16628	2.16628						
Aircraft	ClimbBelow	10000	28474.86892	436771.59	40:56.8	34.02002	13.00695	15.03908	14.96066	15.03908	698.54101	2.80969	
	2.48217	10.02952	89838.21143	35223.41285	36.78953	15.35934	15.35934						
Aircraft	Above10000	0 0	0	0.00:00	0	0	0	0	0	0	0	0	(
	0	0	0	0	0								
Aircraft	DescendBeld	ow10000	8477.69147	585363.15	49:42.4	53.38967	3.36693	3.89295	3.87265	3.89295	78.22329	0.40961	
	0.54087	1.16703	26747.11658	10486.90434	10.95318	2.11751	2.11751						
Aircraft	DescendBeld	owMixingHeig	ht	7102.47135	336520.76	15:41.6	30.53775	1.84379	2.13186	2.12074	2.13186	70.90262	
	0.13457	0.44461	0.06685	22408.29711	8785.75706	9.17639	0.64603	0.64603					
Aircraft	DescendBeld	ow1000	1937.84279	57861.3	16:30.0	5.78374	0.35945	0.41561	0.41344	0.41561	19.1175	0.04621	
	0.14237	0.02318	6113.89399	2397.11153	2.50369	0.21176	0.21176						
Aircraft	DescendGro	und	669.88988	14494.47	06:03.0	3.05444	0.16541	0.19126	0.19026	0.19126	6.82519	0.01198	
	0.04395	0.00582	2113.50257	828.65378	0.8655	0.06174	0.06174						
Aircraft	DescendTax	i 0	0	0.00:00	0	0	0	0	0	0	0	0	C
	0	0	0	0	0								
Aircraft	FullFlight	36952.56038	1022134.74	30:39.1	87.40969	16.37388	18.93203	18.83331	18.93203	776.7643	3.2193	3.02305	
	11.19654	116585.328	45710.31719	47.74271	17.47686	17.47686							
Aircraft	APU	0	0	36:16.2	3.61455	0.34265	0.39619	0.39412	0.39619	6.27102	0	0	C
	0	0	0.72626	0.7315	0.7315								
Operation	Group	Mode	Fuel (ST)	Distance (mi)	Duration	CO (ST)	HC (ST)	TOG (ST)	VOC (ST)	NMHC (ST)	NOx (ST)	PMNV (ST)	
	PMSO (ST)	PMFO (ST)	CO2 (ST)	H2O (ST)	SOx (ST)	PM 2·5 (ST)	PM 10 (ST)						
GSE	GSE Populat	ion	0	0	0.00:00	36.73159	0	2.24338	2.08963	1.98741	11.65833	0	(
	0	0	0	0.29381	0.65892	0.68551							

Source: KBE and Massport.



Terminal E Building Greenhouse Gas Emissions

This section provides the total building energy usage of electricity and fuel for the Terminal E Baseline and Preferred Cases as provided by the eQUEST energy model (**Figure F-1**)¹, in addition to applicable emission factors (**Figures F-2 and F-3**). The CO₂ emission factors for electricity usage, expressed as pounds of CO₂ per megawatt hour, was obtained from the most recent ISO New England's annual assessment of air emissions from regional electric generators.² The CO₂ emission factors for natural gas usage, in terms of kilograms of CO₂ per therm, was obtained from the U.S. Energy Information Administration.³

Figure F-1: Total Building Energy Usage of Electricity and Fuel for Baseline and Prefered Cases

ssumptions:										
Boiler Plan	nt Average Efficiency:	70%	Chiller Plant Coeffic	cient of Performance:	4.4					
Steam Closed Loo _l	p Distribution Losses:	15%	Chilled Water Thermo	al Distribution Losses:	5%					
		On-Site Energy		Central Pla	ent Energy	Total Energy Consumption				
	Electric	Steam/ Hot Water	Chilled Water	Boiler Natural Gas	Chiller Electricity	Electric	Natural Gas			
соре	kWh	MMBtu	MMBtu	Therms	kWh	kWh	Therms			
Terminal E Modernization Baseline Case	12,584,363	8,791	16,493	147,744	1,156,043	13,740,405	147,744			
Terminal E Modernization Proposed Case	10,964,190	8,804	12,624	147,966	884,880	11,849,070	147,966			
Savings	1,620,173	(13)	3,869	(223)	271,163	1,891,335	(223			
Notes: 1 On-Site Energy as estimated by energy modeling software. 2 On-Site Energy represents the energy consumption measured at the building before accounting for central plant efficiencies and losses. 3 Terminal E Modernization Baseline Case is the average of four baseline case rotations. 4 Central Plant Energy calculated based on the assumptions outlined above. Central Plant Energy represents the energy consumed at the central plant and delivered to meet the On-Site energy demands; includes 5 plant efficiencies and distribution thermal losses. For the purpose of this exercise, the Central Plant energy performance has been assumed to meet LEED requirements when the actual 6 information is unavailable. 7 Terminal E Modernization Proposed Case does not include potential Energy Conservation Measures (ECMs).										

¹ eQUEST – the Quick Energy Simulation Tool, version 3.64, http://www.doe2.com/equest/.

² ISO New England Inc., January 2016, 2014 ISO New England Electric Generator Air Emissions Report, http://www.iso-ne.com/static-assets/documents/2016/01/2014 emissions report.pdf.

U.S. Energy Information Administration, Emission Factors and Global Warming Potentials, http://www.eia.gov/oiaf/1605/emission_factors.html.



Figure F-2: 2013 and 2014 New England System Emissions and Emission Rates

2013 and 2014 New England System Emissions (ktons) and Emission Rates (lb/MWh)

	Annual System Emissions									
	2013 Emissions (kTons)	2014 Emissions (kTons)	Total Emissions % Change	2013 Emission Rate (lb/MWh)	2014 Emission Rate (lb/MWh)	Emission Rate % Change				
NO _X	20.32	20.49	0.8	0.36	0.38	5.6				
SO ₂	18.04	11.68	-35.3	0.32	0.22	-31.3				
CO ₂	40,901	39,317	-3.9	730	726	-0.5				

Figure F-3: Fuel Emission Factors

Fuel Emission Factors

(From Appendix H of the instructions to Form EIA-1605)

1. Carbon Dioxide Emission Factors for Stationary Combustion¹

Fuel	Emission Factor	Units
Natural Gas ²		
Pipeline Natural Gas		
HHV of 975 - 1000 Btu/scf	54.01	kg CO ₂ / MMBtu
	5.401	kg CO ₂ / therm
HHV of 1000 - 1025 Btu/scf	52.91	kg CO ₂ / MMBtu
	5.291	kg CO ₂ / therm
HHV of 1025 - 1050 Btu/scf	53.06	kg CO ₂ / MMBtu
	5.306	kg CO ₂ / therm
HHV of 1050 - 1075 Btu/scf	53.46	kg CO ₂ / MMBtu
	5.346	kg CO ₂ / therm
HHV of 1075 - 1100 Btu/scf	53.72	kg CO ₂ / MMBtu
	5.372	kg CO ₂ / therm
Weighted National Average (1029 Btu/scf)	53.06	kg CO ₂ / MMBtu
	5.306	kg CO ₂ / therm
Flared Natural Gas	54.71	kg CO ₂ / MMBtu
	5.471	kg CO ₂ / therm

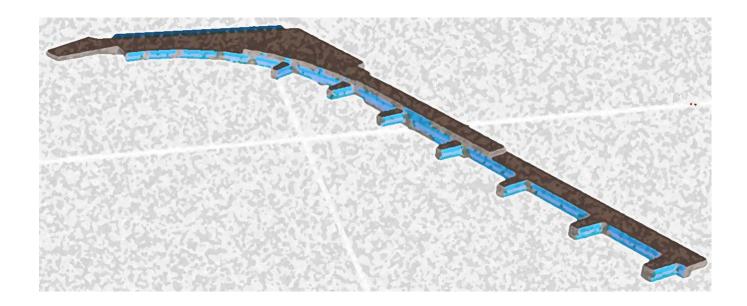
¹ All factors assume 100 percent combustion except those for MSW, which assume 98% combustion.

² Energy Information Administration, Documentation for Emissions of Greenhouse Gases in the United States 2005, DOE/EIA-0638 (2005), October 2007, Tables 6-1, 6-2, 6-4, and 6-5.

Appendix G Energy Model

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Terminal E Modernization
Boston Logan International Airport – Massachusetts Port Authority
Boston, Massachusetts

MEPA Greenhouse Gas Analysis June 30, 2016

Detailed Energy Modeling Assumptions

The following tables summarize the architectural, electrical, mechanical, and plumbing inputs used in the energy models. The Baseline Case represents the current Massachusetts Energy Code: ASHRAE 90.1-2010 based on Appendix G and ASHRAE Climate Zone 5A. The baseline energy model is first simulated at its actual orientation, then at 90°, 180° and 270° and then the energy consumption of the four runs are averaged. The Proposed Case represents the current design considerations, potential Energy Conservation Measures (ECM) are indicated in **Bold**.

General

PARAMETER	BASELINE CASE/ PROPOSED CASE
Energy Modeling Software	eQuest 3.64, build 7130
Weather File	TMY3, MA_Boston_Logan_Intl_Arp
Heating Design Day	8.1°F
Cooling Design Day	87.6°F DB 71.9°F CWB 14.9 Drybulb Range

Architectural

Architectural		
MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Building Area (ft²)	640,000	640,000
Occupancy, building average (area/ person)	50	50
Space Set-point Cooling (F)	75°F	75°F
Space Set-point Heating (F)	70°F	70°F
Roof Assembly	U-0.048	Membrane roofing system with 4 in. polyiso insulation minimum, 8 in maximum at R-6.0 per inch; U-0.037
Wall Assembly - Above Grade	U-0.064	Composite metal panel wall on metal stud backup with 3 in. polystyrene rigid at R-5.0 per inch; U-0.05

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Floor Assembly	U-0.038	Exposed deck sprayed with 4 in. of urethane closed cell insulation U-0.038
Vertical fenestration Area (% of wall)	Max Allowable 40%	25%
Vertical Glazing U-factor	Curtainwall Assembly U-factor: 0.45	Curtainwall: Double-glazed argonfilled unit with #2 low-e coating (similar to 1/4" Solar Ban 70XL on Bronze) and thermally broken aluminum curtain wall assembly (similar to EFCO 5600): 0.34 (0.21 COG)
Vertical Glazing SHGC	0.40	0.19
Vertical Glazing Tvis	n/a	0.36
Shading Devices	None	Exterior fixed shades with exposed glazing on the curb and south side of terminal.
Building Self-Shading Description	None	Building is self-shaded by its own exterior surfaces.

Electrical / Lighting

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Automatic Lighting Shutoff Method	Time of day schedule with occupancy sensors in conference rooms, break rooms, and meeting rooms as required.	Time of day schedule with occupancy sensors in all enclosed spaces.
Interior Lighting Power Calc Method	Building Area Method	Building Area Method
Average Interior Lighting Power Density (W/SF)	0.77	0.62
Automatic Interior Space Shutoff Control in Required Spaces	Automatic shut-off in spaces as required by code based on occupancy sensor.	Automatic shut-off in all enclosed spaces based on occupancy sensor.

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Daylight Dimming Controls	In all perimeter areas with exposure to natural daylight.	In all perimeter areas with exposure to natural daylight.
Exterior Lighting Power (kW)	16.0	9.3
Equipment, building average (w/ft2)	2.0	2.0
Elevator Total Power (kW)	147	147
Escalator Total Power (kW)	155	155
Baggage Handling Equipment (kW)	960	960

Mechanical (Air-side)

nconamour (Air Sido)		
MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Primary HVAC Type	System 7: VAV with reheat	VAV units with reheat serving the building by space type. Separate units serving holding level and club level.
Cooling	Chilled water (campus plant)	Chilled water (campus plant)
Heating	Steam (campus plant)	Steam (campus plant)
Fan System Operation	Fans are operated continuously	Fans are operated continuously
VAV Terminal Box Minimum Flow	30%	50% ECM – Dual Box, 30% for cooling, 50% for heating
Outdoor Air Design Min Ventilation	Based on 62.1-2007 minimum.	Based on 62.1-2007 minimum, approximately 23% outdoor air.

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
HVAC Air-side Economizer Cycle	Based on drybulb	Based on dual enthalpy
Economizer High-Limit Shutoff	70°F DB	N/A
Design Airflow Rates (Conditioned)	358,000 CFM	474,000 CFM
Total System Fan Power (Conditioned)	650 kW	570 kW
Air Filtration	Pre-filter – Merv 8 Post-filter – Merv 8 Final-filter – Merv 13 Carbon Filter	Pre-filter – Merv 8 Post-filter – Merv 8 Final-filter – Merv 13 Carbon Filter ECM – Dynamic V8 Filter (eliminates Merv 13 and carbon)
Pressure Drop Adjustments	MERV 13 for filters, carbon filters, sound attenuators	N/A
Exhaust Air Energy Recovery	None (not required)	ECM — Enthalpy Heat Wheel
Demand Control Ventilation	Spaces greater than 40 people / 1000 sq ft. and >500sf	Spaces greater than 40 people / 1000 sq ft. and >500sf
Supply Air Temperature Reset Parameters	Supply Air Temperature shall reset 5°F higher under minimum cooling load conditions.	Supply Air Temperature shall reset 10°F higher under minimum cooling load conditions.

Mechanical (Waterside – Cooling)

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Primary Cooling Source	Chilled water from campus central plant	Chilled water from campus central plant
Chilled Water Loop Supply Temp	44°F	42°F

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Chilled Water (CHW) Loop Delta-T	12°F	16°F
CHW Loop Temp Reset Parameters	Load reset	Constant temperature
CHW Loop Configuration	Primary, variable secondary	Variable Primary
Number of Chilled Water Pumps	1 – primary 1 – secondary	1 - primary
Chilled Water Pump Flow Rate	4,000 GPM 4,000 GPM	2,200 GPM
Chilled Water Pump Power	32 kW 32 kW	72 kW

Mechanical (Waterside – Heating)

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Primary Heating Source	Steam from campus central plant	Steam from campus central plant
Hot Water Loop Supply Temperature	180°F	200°F – preheat loop 180°F – reheat loop
Hot Water Loop Delta-T	50°F	20°F
Hot Water Loop Temp Reset Parameters	Load reset	Constant temperature
Hot Water Loop Configuration	Variable flow with variable speed pump	Variable flow with variable speed pump
Number of Hot Water Pumps	1	1

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Chilled Water Pump Flow Rate	710	625 GPM
Hot Water Pump Power	10 kW	21 kW
Fin Tube Radiation	None	ECM – Fin tube on perimeter of holding and clubs (allows terminal box to have 30% minimum for heating, eliminated stratification issues)
Service Water Heating		
MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Service Hot Water Type	Same as Proposed Case	Electric instantaneous hot water heaters
Temperature	140°F	140°F
Flowrate (GPM)	52	32
Renewable Energy		
MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
Photo Voltaic Array	None	ECM – 300 kW

Potential Energy Conservation Measures

The following is a comprehensive list of ECMs that should be considered for this project. Each ECM has been categorized as one of the following:

- **Adopted** the project is pursuing this ECM.
- Under further consideration studied through energy modeling, results included in this report.
- Considered at a later stage not currently considered but not rejected.
- **Rejected** not considered viable for this project.

ARCHITECTURAL			
ECM	Details	Categorization	
WALL R	Wall assembly R-values to <i>meet</i> prescriptive code minimum, including thermal bridges.	Adopted	
ROOF R	Roof R-value to <i>meet</i> prescriptive code minimum.	Adopted	
FLOOR R	Exposed floor assembly R-value to meet prescriptive code minimum, including thermal bridges.	Adopted	
SLAB R	Slab insulation to meet prescriptive code minimum.	Adopted	
MASS	Maximize thermal mass for thermal damping.	Adopted	
SPANDREL	Fully insulated Spandrel.	Adopted	
AIRTIGHT	Comprehensive air sealing. Consider blower door test, typical window tests and door tests. Refer to AAMA 101 testing procedures.	Adopted	
LIGHT-ROOF	High-albedo roofing material.	Adopted	
WWR ≤ 40%	Limit overall building window-to-wall ratio for vision glass to 40% or less to limit solar gains and heat loss.	Adopted	
GLASS U +	High performance insulated glazing with optimized window framing selection (thermal breaks, warm edge spacers, low frame area, etc.). IGU with argon fill and thermally broken frame at assembly U-0.35 is highly recommended.	Adopted	
GLASS SHGC +	Optimized glass SHGC based on space conditions and direction. SHGC at 0.35 or less is highly recommended.	Adopted	
FIXED SHADE	Fixed exterior shading devices to limit solar gains (low cost, horizontal facing south are optimal).	Adopted	
INT BLINDS	Automated reflective interior blinds to reduce solar heat gain coefficient	Rejected	

ELECTRICAL		
ECM	Details	Categorization
LPD -20%	Interior lighting power density reduction through LED lighting, reducing fixture count, and limiting lighting levels to code minimum.	Adopted
DAYLIGHT	Daylighting dimming controls for all perimeter spaces. To take credit for this reduction in the proposed design energy model, daylighting control requirements have to be part of tenant lease agreement.	Adopted
LIGHT-OCC	Occupancy / vacancy sensor control exceeding code.	Adopted
LIGHT-MULTI	Multi-scene / multi-level / bi-level to allow lighting to be reduced.	Adopted
EXT LPD REDUC	Exterior lighting power density reduction.	Adopted
ELEVATOR	High efficiency elevator and escalator.	Adopted
MECHANICAL		
ECM	Details	Categorization
HVAC ZONING	Separate systems for areas with differing usage, outdoor air requirements, space setpoints, etc.	Adopted
SEAL DUCTS	Seal and leak check all supply air ductwork.	Adopted
EC MOTORS	Electrically commutated motors for fan coil units, pumps, fans, where equipment is available. Can be more efficient than fan with VFD.	Adopted
↓AHU SP	Low static pressure, low velocity across coils and filters in AHU.	Adopted
↓ DUCT SP	Low static pressure, low velocity in ducts.	Adopted
PERIMETER	Hydronic heating at the perimeter	Under further consideration
HW LOOPS	Separate hot water loops for reheat, preheat and perimeter heating for increased controllability.	Adopted
MOTOR EF	Premium-efficiency pumps and fan motors.	Adopted
FAN ARRAY	Mutli-fan arrays for AHUs for increased controllability.	Adopted
DYNAMIC V8	MERV 15 advanced low-pressure drop air filtering.	Under further consideration
HEAT RECOV	Heat wheel energy recovery.	Under further consideration
GROUND	Ground source heat pumps	Rejected

CONTROLS		
ECM	Details	Categorization
MIN VENT	Provide only minimum ventilation as required by code.	Adopted
SAT RESET	10°F supply air temperature reset.	Adopted
SP RESET	Static pressure reset based on terminal box positions. At a minimum have a fixed static pressure sensor with an occupied and unoccupied static pressure setpoint.	Adopted
+DCV	Demand controlled ventilation beyond code. Control to increase and decrease airflow based on ventilation and load.	Adopted
SETBACK T	Unoccupied temperature setbacks based on occupancy sensor or time of day.	Adopted
DUAL MAX	Dual-maximum VAV-box control which allows the minimum to be reduced below the heating airflow.	Under further consideration
HVAC-OCC	Occ-sensor-based temp and airflow setbacks in applicable spaces (office, conf, etc).	Adopted
FAN CYCLING	Turn fans (supply, return, general exhaust) off when building is not occupied. Allow to cycle on to meet load, if necessary.	Rejected
PLUMBING		
ECM	Details	Categorization
DHW -30%	Reduce domestic hot water usage by using low flow fixtures.	Adopted
DISTRIBUTED	GENERATION (ON-SITE)	
ECM	Details	Categorization
SOLAR	Photovoltaic array or solar hot water panels on roof.	Under further consideration
COGEN	Combined heat and power	Rejected

Building Efficiency Summary

There are several facets which allow this building to perform better than one constructed to the minimum high standards required by ASHRAE 90.1-2010. The highlighted differences are as follows:

Architectural The building envelope is expected to meet or exceed the minimum performance threshold:

- Exterior walls.
- Roof.
- Exposed floors.
- Glazing.
- Window to wall ratio.

Air handing units The design units are Variable Air Volume (VAV) which are similar to what is required by 90.1 in the base case. However, the design VAVs are designed to include the following attributes to improve energy efficiency:

- Oversized fans, ducts and coils resulting in reduced air velocity and static pressure. The primary energy benefit stems from reduced fan power per cfm.
- Dual enthalpy air economizer which maximizes the benefit of using outdoor air to condition the building. Rather than simply using outdoor air up to a fixed temperature (70°F in the base case), the dual enthalpy economizer selects whether to maximize outdoor air or return air based on enthalpy in either airstream. The controls will determine which airstream will consume the least amount of energy to meet the required supply conditions.
- The AHUs have the ability to both reset the fan static pressure and reset the supply air temperature based on space load conditions. These controls reduce fan power, cooling energy and heating energy.

Water loops The design units have been developed to be more efficient in the following ways:

• Chilled water supply temperature reduced from 44°F (base case) to 42°F with a wider return temperature. This reduces the demand on the pumping and fan systems.

Under further consideration The following ECMs were studied for their impact on energy consumption:

- Dual Box Minimum allows for a terminal reheat box to have a minimum setpoint for cooling and another for heating.
- Fin Tube Radiation reduces heating at the primary fan system and places load on the more efficient hydronic system.
- Energy Recovery Wheel recovers energy that would otherwise be exhausted out of the building.
- Dynamic V8 Filtration Reduces air handling unit fan power while providing equivalent filtration.
- Photo Voltaic Array Produce approximately 3% of total electric energy by solar PV.

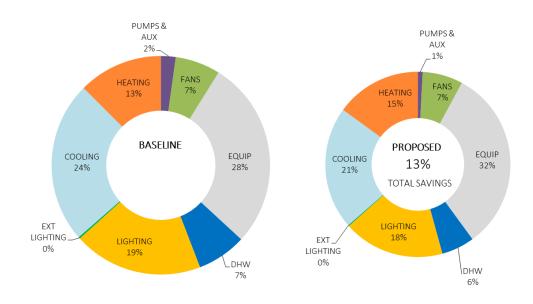
Results The following table shows the current standing of the proposed design in % energy savings versus ASHRAE 90.1-2010 Appendix G baseline case. By adding the ECMs which are 'Under Further Consideration' the savings impact can be noted. The current design results in a savings of 13.8%. Cumulatively the additional ECMs would result in a total savings of up to 23.7%.

Current Design	Add: Dual Box	Add: Fin Tube	Add: Energy	Add: Dynamic V8	Add: Photo
	Minimum	Radiation	Recovery Wheel	Filtration	Voltaic Array
13.8%	14.4%	14.6%	21.1%	21.5%	23.7%

Note: Findings are presented in cumulative numbers. For example, fin tube radiation would potentially save 14.6% in energy use when combined with the dual box minimum and the current design. Accordingly, individual energy conservation measure savings can be determined by comparing it to the previous model.

Breakdown of end uses and annual energy consumption of the baseline case and the proposed case as currently designed (not including ECMs) are on the following pages.

ANNUAL SITE ENERGY CONSUMPTION BY END-USE



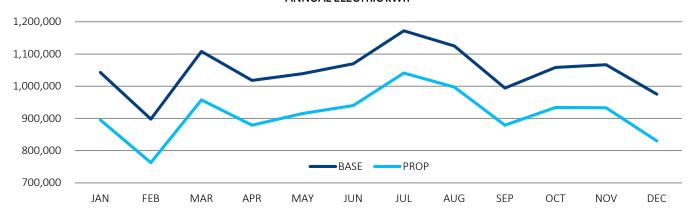
		BASELINE			PROPOSED		
ENERGY		ENERGY	PERCENT		ENERGY	PERCENT	PERCENT
CONSUMPTION	SOURCE	(MMBTU/YR)	OF TOTAL		(MMBTU/YR)	OF TOTAL	SAVINGS
Space Cooling	Chilled Water	16,490	24%	Chilled Water	12,620	21%	22%
Space Heating	Steam/Hot Water	8,790	13%	Steam/Hot Water	8,810	15%	-5%
Pumps	Electricity	1,520	2%	Electricity	490	1%	67%
Fans	Electricity	4,520	7%	Electricity	4,150	7%	8%
Equipment Loads	Electricity	18,870	28%	Electricity	18,870	32%	0%
Domestic Hot Water	Electricity	4,930	7%	Electricity	3,390	6%	31%
Interior Lighting	Electricity	12,920	19%	Electricity	10,400	18%	20%
Exterior Lighting	Electricity	170	0%	Electricity	100	0%	41%
Total Building Energy Co	onsumption	68,200			58,800		14%

Note: Baseline *Total Building Energy Consumption* is the average of the four baseline runs.

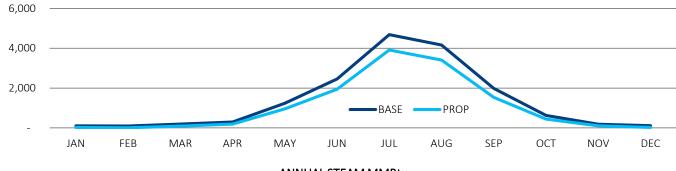
These energy modeling results are estimates of future energy consumption and are to be used for comparison purposes only. BR+A cannot guarantee that these results will reflect actual energy consumption due to the uncertainty of actual schedules of use, weather and many other unforeseen factors.

ELECTRIC kWh		CHILLED WA	ATER MMBtu	STEAM MMBtu		
MONTH	BASE	PROPOSED	BASE	PROPOSED	BASE	PROPOSED
JAN	1,043,431	895,304	106	20	2,593	2,480
FEB	898,485	762,487	92	10	1,891	1,906
MAR	1,109,502	957,251	197	86	1,135	1,209
APR	1,020,719	878,836	305	187	437	505
MAY	1,040,316	915,367	1,273	954	56	73
JUN	1,070,381	940,093	2,520	1,944	14	11
JUL	1,172,897	1,041,116	4,770	3,916	0	-
AUG	1,126,352	997,247	4,247	3,412	0	-
SEP	996,569	878,975	2,042	1,531	5	3
OCT	1,061,247	933,883	646	443	154	160
NOV	1,068,525	933,149	188	102	803	802
DEC	975,941	830,482	108	19	1,703	1,655
TOTAL	12,584,363	10,964,190	16,493	12,624	8,791	8,804

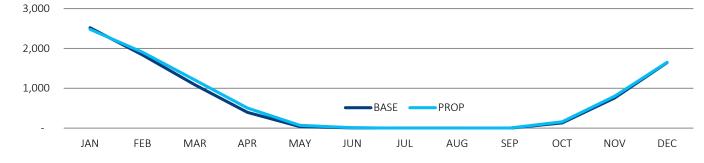
ANNUAL ELECTRIC kWh



ANNUAL CHILLED WATER MMBtu



ANNUAL STEAM MMBtu



Appendix H Agency Correspondence

MBTA Meeting Minutes



AECOM

66 Long Wharf, 2nd Floor, Boston, MA 02110 T 617.723.1700 F 617.749.0947 www.aecom.com

Memorandum

Date: May 19 2016

To: File

From: Ross Edwards

Subject: MBTA Meeting of 10NOV2016

Distribution: S. Sleiman, F. Leo; R. McNulty; S. Dalzell M. Avery; C. Lurie

Location:

MBTA Office 10 Park Plaza Rm. 3910 – General Manager's Conference Room 1:00 – 2:00 PM 10NOV2015

Attendees:

Frank DePaola, General Manager, MBTA
Ed Hunter, Assistant General Manager for Design and Construction, MBTA
Erik Stoothoff, Chief Engineer for Design & Construction, MBTA
Adam Hurtubise, Chief of Staff, MBTA (may wish to attend)
Darrin McAuliffe, Deputy Chief of Staff, MBTA (may wish attend)
Sam Sleiman, Director of Capital Programs & Environmental Affairs, Massport
Rohn MacNulty, Project Manager, Massport
Ross Edwards, AECOM, Consultant for Massport

- 1. Sam Sleiman opened meeting with an Overview of the Terminal E Modernization Project.
- 2. Purpose of meeting was described briefing of proposed pedestrian connector between expanded Terminal E and the existing MBTA Blue Line Station.
- 3. Various alternatives are being considered: over and under the existing highway ramps connecting to Route 1A.
- 4. As discussed in the meeting At a concept level the alternatives are acceptable, subject to close coordination during design with the preference for the alternatives that have the lesser impact on the existing MBTA station.
- 5. There will be continues close coordination as Massport moves into the Design Phase.

End of Record of Meeting

AECOM Transportation

CZM Meeting Minutes



Meeting Notes

Place: CZM, Causeway Street, Boston

Notes Taken by: Meredith Avery

Date: April 14, 2016

Project #: Terminal E Modernization Briefing on Terminal E Modernization and Coastal

Resiliency Measures

ATTENDEES Bradford Washburn (CZM), Lisa Berry Engler (CZM), Stewart Dalzell (Massport), Robbin Peach (Massport), Ross Edwards (AECOM), Meredith Avery (VHB)

Terminal E will be designed to meet Massport Floodproofing design guidelines

- Current FEMA mapping has Terminal E Modernization above projected 2070 coastal flood elevation (including 3' storm surge)
- Critical infrastructure will be located above the first floor
- CZM commended Massport for being "ahead of the curve" on flood planning
- NPDES outfall monitoring should continue to look for illicit discharges (based on recent fecal coliform/enterococcus readings at the end of pipe for North outfall)
- Non project related discussion
- CZM asked about fuel sourcing at Chelsea creek and the risk factors with this Robin reminded CZM that Massport does not own the fuel until it is delivered but agreed a cascading effect should be considered in risk management.
- ·March 2015 FEMA map revision for the airport has been issued.

DOER Meeting Minutes



66 Long Wharf, 2nd Floor, Boston, MA 02110 T 617.723.1700 F 617.749.0947 www.aecom.com

Memorandum

Date: May 03 2016

To: File

From: Ross Edwards

Subject: MEPA DOER Meeting of 30MAR2016

Distribution: S. Dalzell; F. Leo; R. McNulty; M. Avery; C. Lurie

Location:

MEPA Office 100 Cambridge St. 2:30 - 3:3030MAR2016

Attendees:

Johnson, Holly S (ENV) [mailto:holly.s.johnson@state.ma.us

Czepiga, Page (EEA) [mailto:Page.Czepiga@MassMail.State.MA.US]

Paul F. Ormond, P.E. Efficiency Division, Massachusetts Department of Energy Resources

Dalzell, Stewart SDalzell@massport.com

Avery, Meredith MAvery@VHB.com

Edwards, Ross Ross.Edwards@aecom.com

- Stewart Dalzell opened meeting with an Overview of the Terminal E Modernization Project.
- 2. Discussed Central Heating Plant and anticipated upgrades (related to overall maintenance and end of life decisions for the CHP and not necessarily this project).
 - a. DOER strongly encouraged looking into Co-gen possibilities at CHP. Massport said it is under study - but as airport wide consideration and not for Terminal E
- 3. DOER requested that EA/DEIR is clear on emission benefits of the apron operations in the build condition and that these are presented separately and distinctly from terminal GHG discussion of efficiencies
- 4. Solar was encouraged MEPA/DOER understood that glare studies and other considerations need to be advanced and DEIR document can commit to studying it
- 5. DOER encouraged Massport to reach out to Eversource for grants to fund certain renewable projects.

AECOM Transportation