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# Appendices

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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**

Fiscal Year	Enplanements					Itinerant Operations					Local Operations				
	Air Carrier	Commuter	Total	Air Carrier	Air Taxi & Commuter	GA	Military	Itinerant	Civil	Military	Total Local	Total Local	Total Ops		
1990	10,277,976	804,563	11,082,539	246,462	157,424	42,567	540	446,993	1,497	-	-	1,497	448,490		
1991	9,809,008	800,102	10,609,110	233,947	175,199	30,924	645	440,715	-	-	-	-	440,715		
1992	10,065,088	871,294	10,936,382	242,253	207,689	31,954	686	482,582	-	-	-	-	482,582		
1993	10,274,989	1,202,674	11,477,663	241,914	225,548	27,265	620	495,347	-	-	-	-	495,347		
1994	11,033,868	1,037,216	12,071,084	246,233	202,391	29,416	620	478,660	-	-	-	-	478,660		
1995	10,926,245	1,028,323	11,954,568	241,662	196,929	38,985	677	478,253	-	-	-	-	478,253		
1996	11,152,148	1,025,361	12,177,509	230,602	203,003	28,241	661	462,507	-	-	-	-	462,507		
1997	11,203,247	1,045,898	12,249,145	240,363	219,169	34,030	759	494,321	-	-	-	-	494,321		
1998	11,665,587	996,141	12,661,728	250,630	226,457	34,236	580	511,903	-	-	-	-	511,903		
1999	12,120,545	967,062	13,087,607	264,761	204,453	35,659	610	505,483	-	-	-	-	505,483		
2000	12,711,362	1,065,800	13,777,162	271,864	203,744	33,213	569	509,390	708	15	723	723	510,113		
2001	11,779,862	1,159,525	12,939,387	263,458	208,069	25,262	612	497,401	2,007	66	2,073	2,073	499,474		
2002	9,725,563	953,377	10,678,940	207,138	178,182	18,241	673	404,234	1,126	10	1,136	1,136	405,370		
2003	9,727,046	1,257,249	10,984,295	187,952	173,839	19,111	496	381,398	457	-	457	457	381,855		
2004	11,046,626	1,441,592	12,488,218	210,805	170,259	27,284	714	409,062	245	-	245	245	409,307		
2005	11,568,512	1,624,173	13,192,685	219,993	179,316	28,709	736	428,754	100	23	123	123	428,877		
2006	11,937,833	1,472,961	13,410,794	212,314	174,100	25,070	773	412,257	93	8	101	101	412,358		
2007	12,296,139	1,550,867	13,847,006	209,841	178,658	21,266	512	410,277	18	-	18	18	410,295		
2008	11,758,435	1,399,019	13,157,454	198,111	165,689	20,324	493	384,617	22	1	23	23	384,640		
2009	11,004,733	1,367,114	12,371,847	183,384	158,057	17,615	522	359,578	-	-	-	-	359,578		
2010	11,887,170	1,352,871	13,240,041	179,796	166,787	18,767	925	366,275	-	-	-	-	366,275		
2011	12,698,331	1,429,607	14,127,938	184,401	171,416	17,353	720	373,890	-	-	-	-	373,890		
2012	13,087,587	1,238,341	14,325,928	264,773	83,535	15,227	658	364,193	-	-	-	-	364,193		
2013	13,395,490	1,202,512	14,598,002	266,743	79,060	14,823	717	361,343	-	-	-	-	361,343		
2014	14,004,932	1,224,134	15,229,066	278,431	74,004	15,362	729	368,526	-	-	-	-	368,526		
2015	14,817,042	1,180,597	15,997,639	284,767	71,321	14,953	978	372,019	-	-	-	-	372,019		
2016	16,007,682	1,276,018	17,283,700	306,784	74,312	14,878	978	396,952	-	-	-	-	396,952		



**APO Terminal Area Forecast Summary Report  
Forecast Issued January 2016**

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

# Appendix D

## Noise Technical Appendix

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# Appendix D

## Noise Technical Appendix

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### 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.

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### 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 ( $L_{eq}$ ); 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

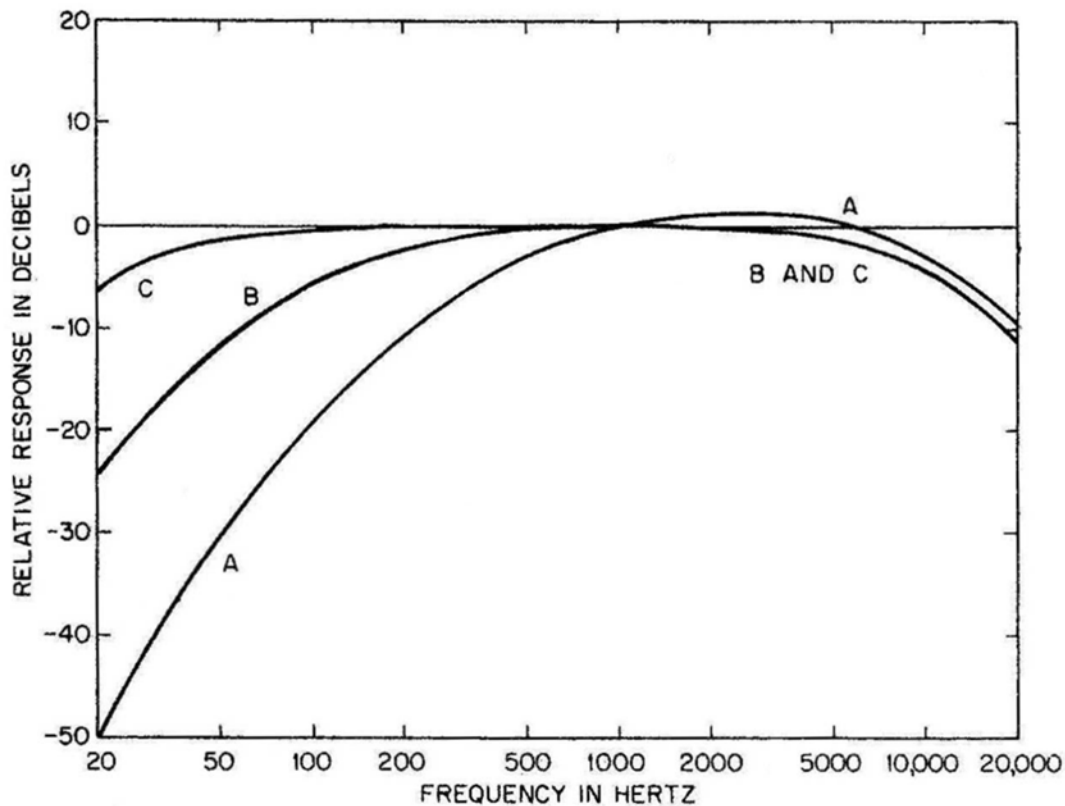
Another important characteristic of sound is its frequency, or “pitch.” This is the rate of repetition of the sound pressure oscillations as they reach our ear. Formerly expressed in cycles per second, frequency is now expressed in units known as Hertz (Hz).

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

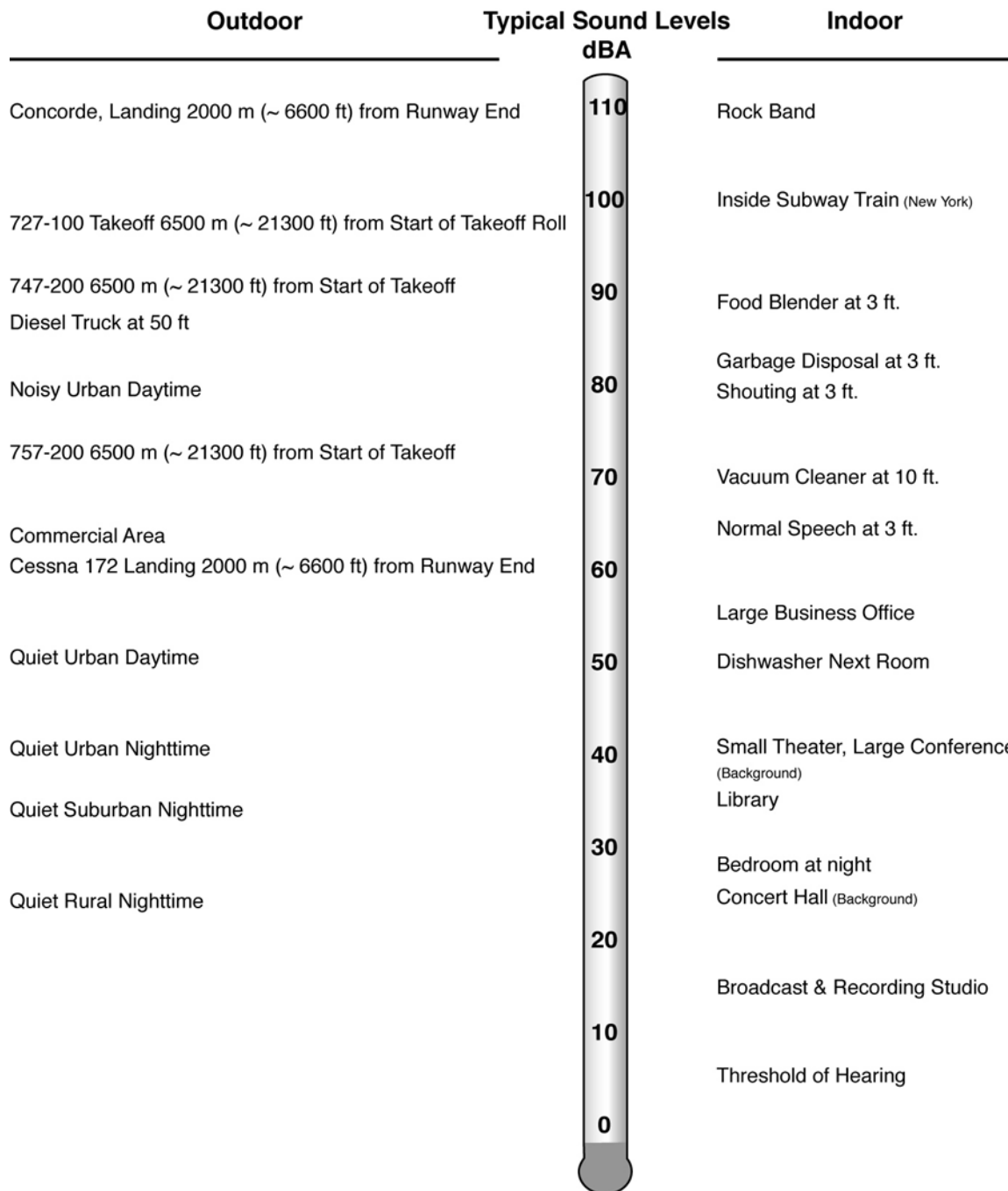


Source: Harris, Cyril M., editor; Handbook of Acoustical Measurements and Noise Control, (Chapter 5, "Acoustical Measurement Instruments"; Johnson, Daniel L.; Marsh, Alan H.; and Harris, Cyril M.); New York; McGraw-Hill, Inc.; 1991; p. 5.13.

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

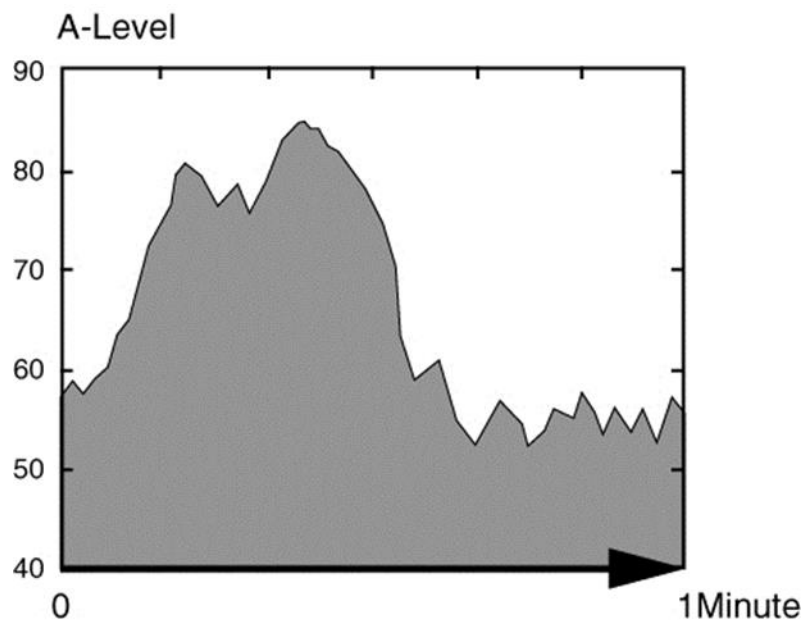


Source: HMMH (Aircraft noise levels from FAA Advisory Circular 36-3H)



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**



Source: HMMH

### Maximum A-Weighted Noise Level, $L_{max}$

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.

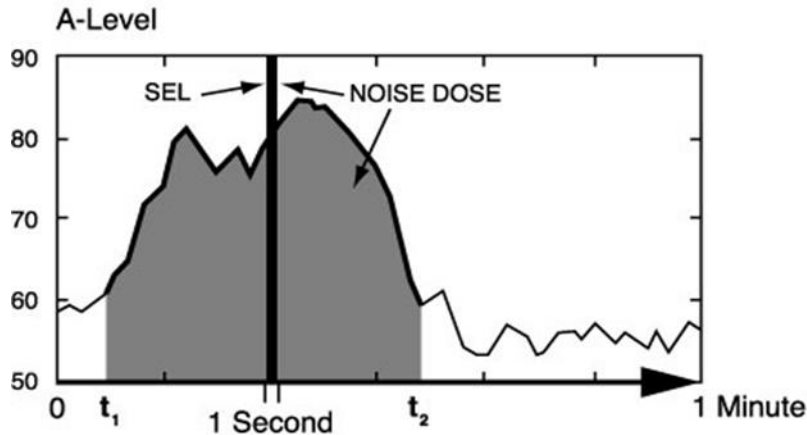
The maximum level describes only one dimension of an event; it provides no information on the cumulative noise exposure. In fact, two events with identical maxima may produce very different total exposures. One may be of very short duration, while the other may continue for an extended period and be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



Source: HMMH

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 ( $L_{eq}$ )

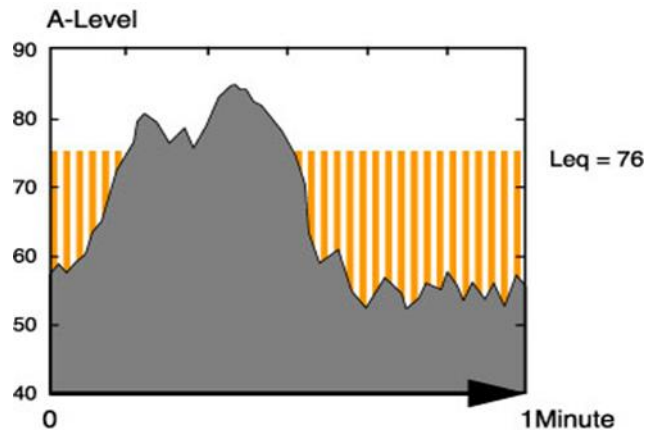
The  $L_{max}$  and SEL quantify the noise associated with individual events. The remaining metrics in this section describe longer-term cumulative noise exposure that can include many events.

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  $L_{eq}(24)$ .

$L_{eq}$  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  $L_{eq}$  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.

**Figure D-5 Example of a One Minute Equivalent Sound Level ( $L_{eq}$ )**



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:<sup>1</sup>

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.<sup>2</sup>

<sup>1</sup> EPA. 1974. *Information Levels of Environmental Noise Requisite to Project Public Health and Welfare with an Adequate Margin of Safety.*

<sup>2</sup> *Ibid.*



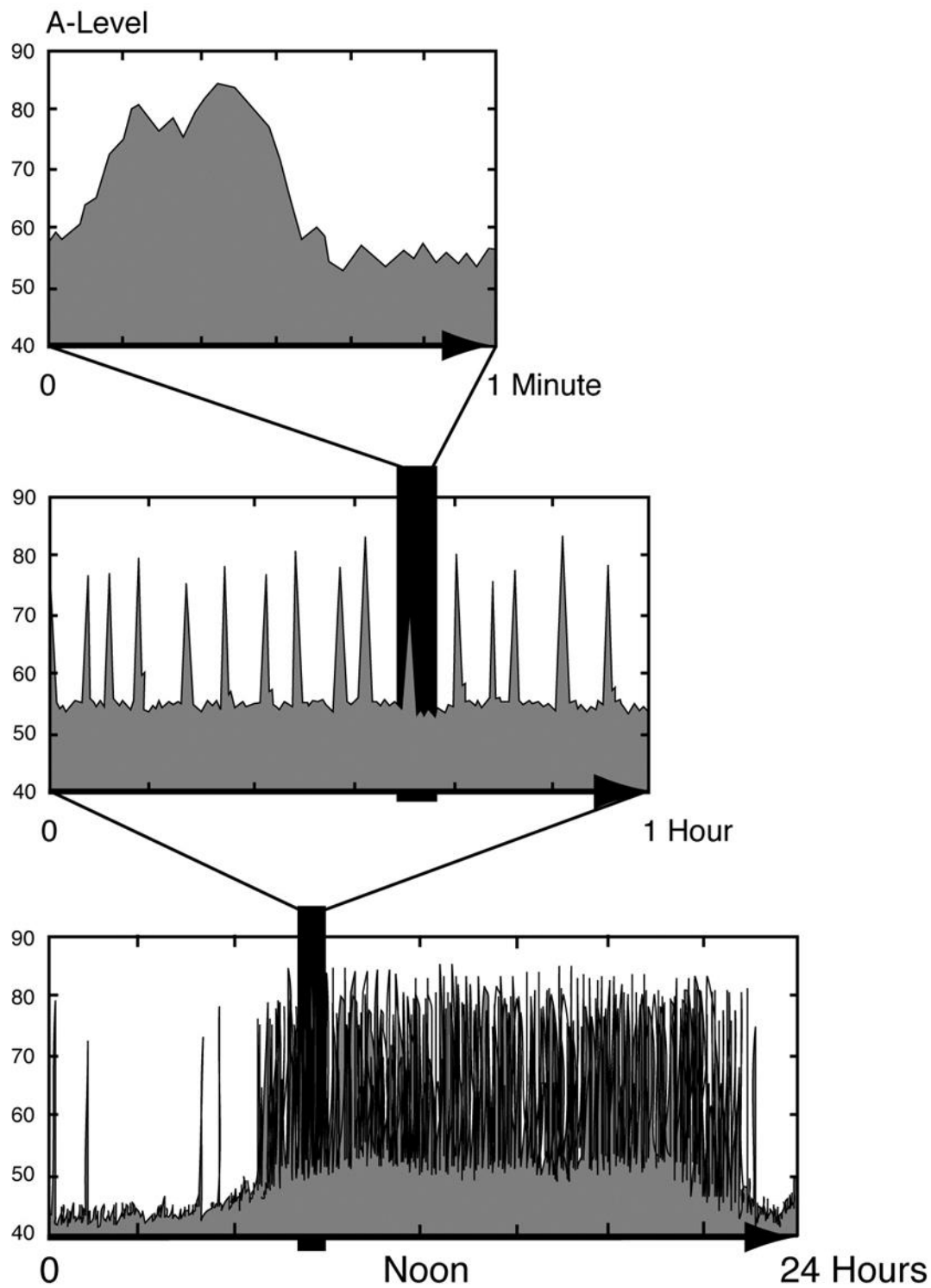
Most federal agencies dealing with noise have formally adopted DNL. The Federal Interagency Committee on Noise (FICON) reaffirmed the appropriateness of DNL in 1992. The Federal Interagency Committee on Noise summary report stated; “There are no new descriptors or metrics of sufficient scientific standing 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.

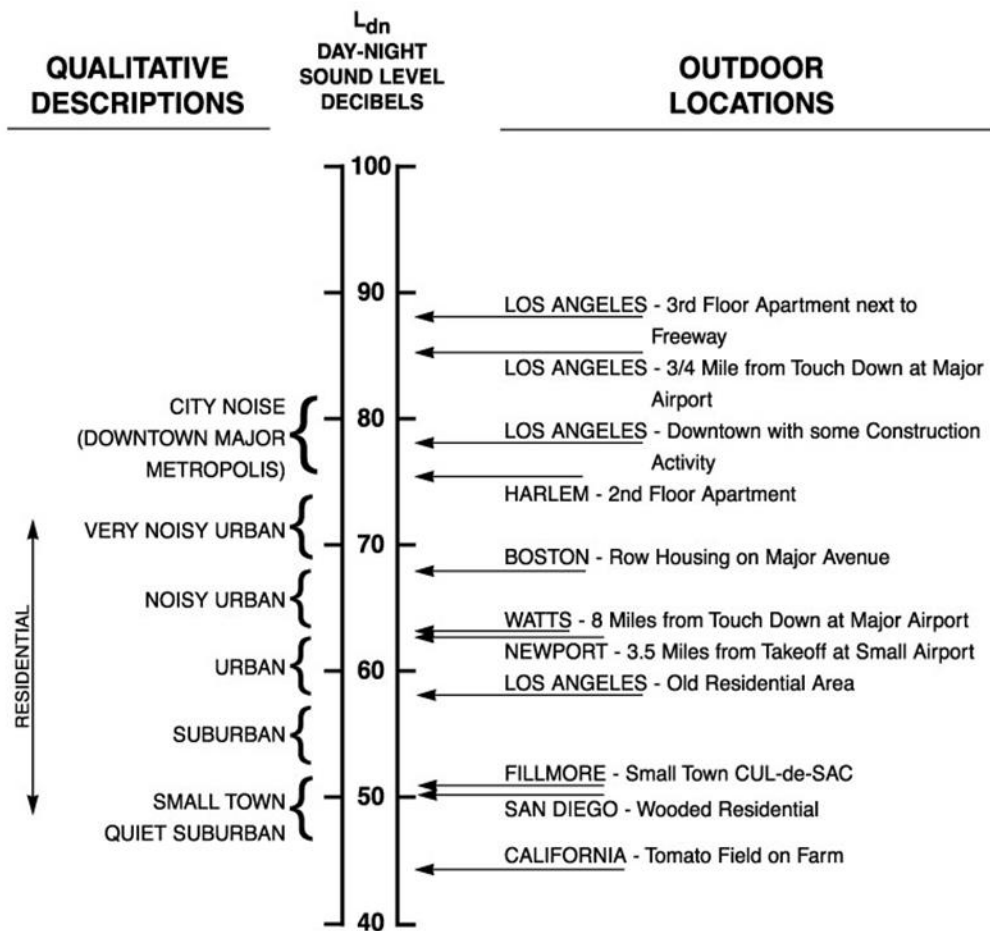
DNL can be measured or estimated. Measurements are practical only for obtaining DNL values for relatively limited numbers of points, and, in the absence of a permanently installed monitoring system, only for relatively short time periods. Most airport noise studies are based on computer-generated DNL 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: HMMH

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.

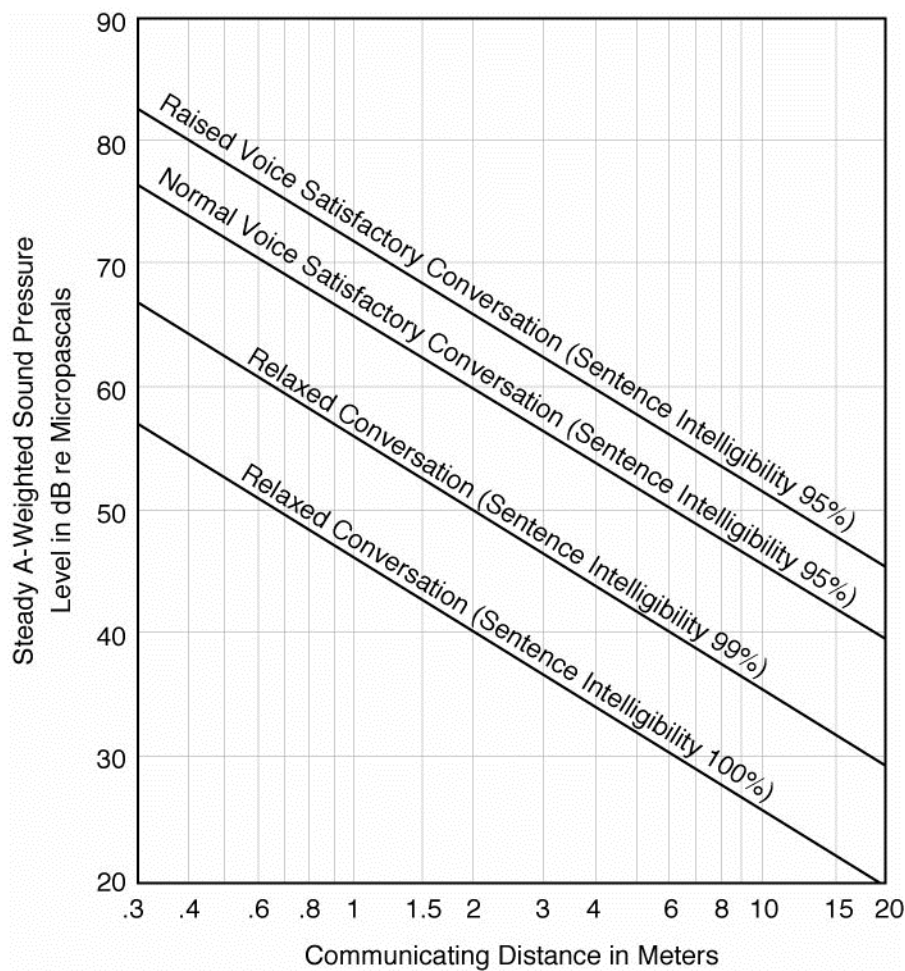
### The Effects of Aircraft Noise on People

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.

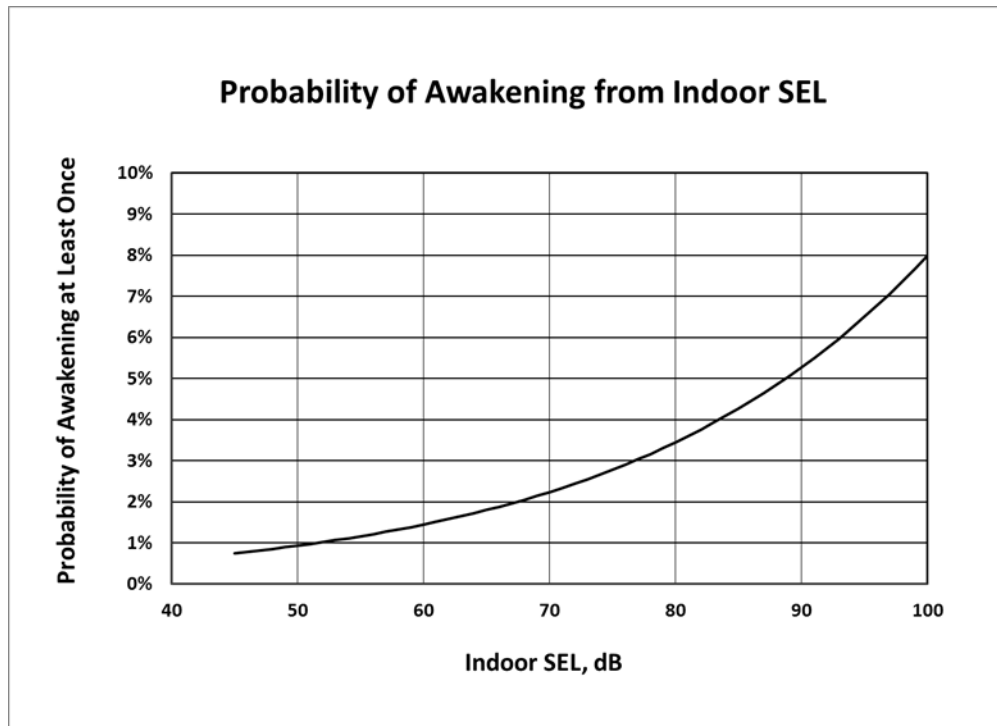
Indoors, typical distances, voice levels, and intelligibility expectations generally require a background level less than 45 dBA. With windows partly open, housing generally provides about 12 dBA of interior-to-exterior noise level reduction. Thus, if the outdoor sound level is 60 dBA or less, there 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

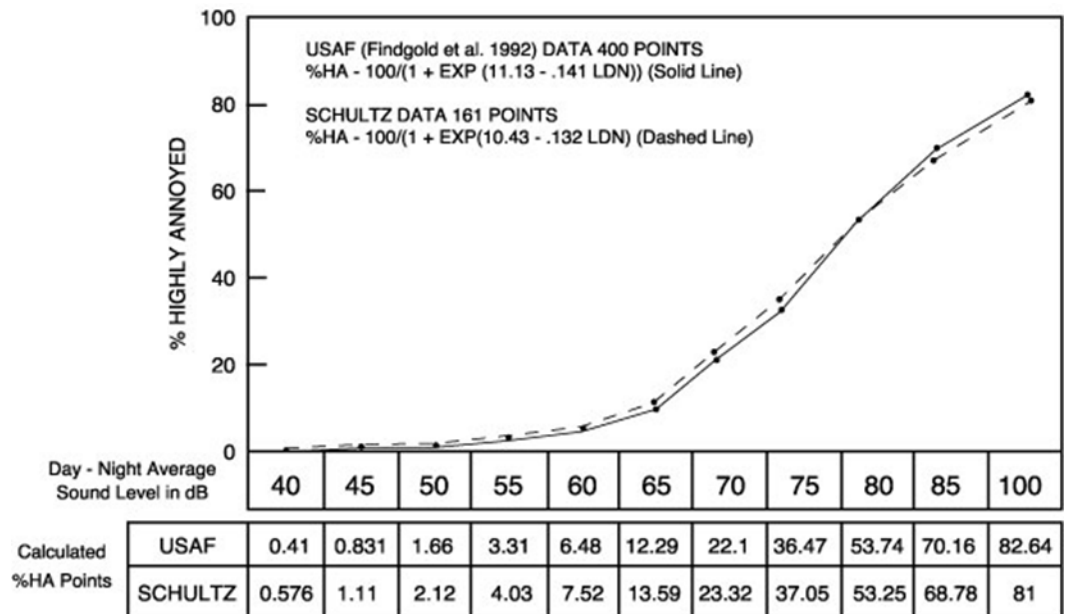
For example, an indoor SEL of 80 dB results in approximately 3.5% of the exposed population being awakened. If windows are open in the bedroom on a warm evening and a house provides a typical outside to inside noise level reduction of around 15 dB, which suggests it takes an SEL of about 95 dB outdoors 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.

**Figure D-10 Percentage of People Highly Annoyed**



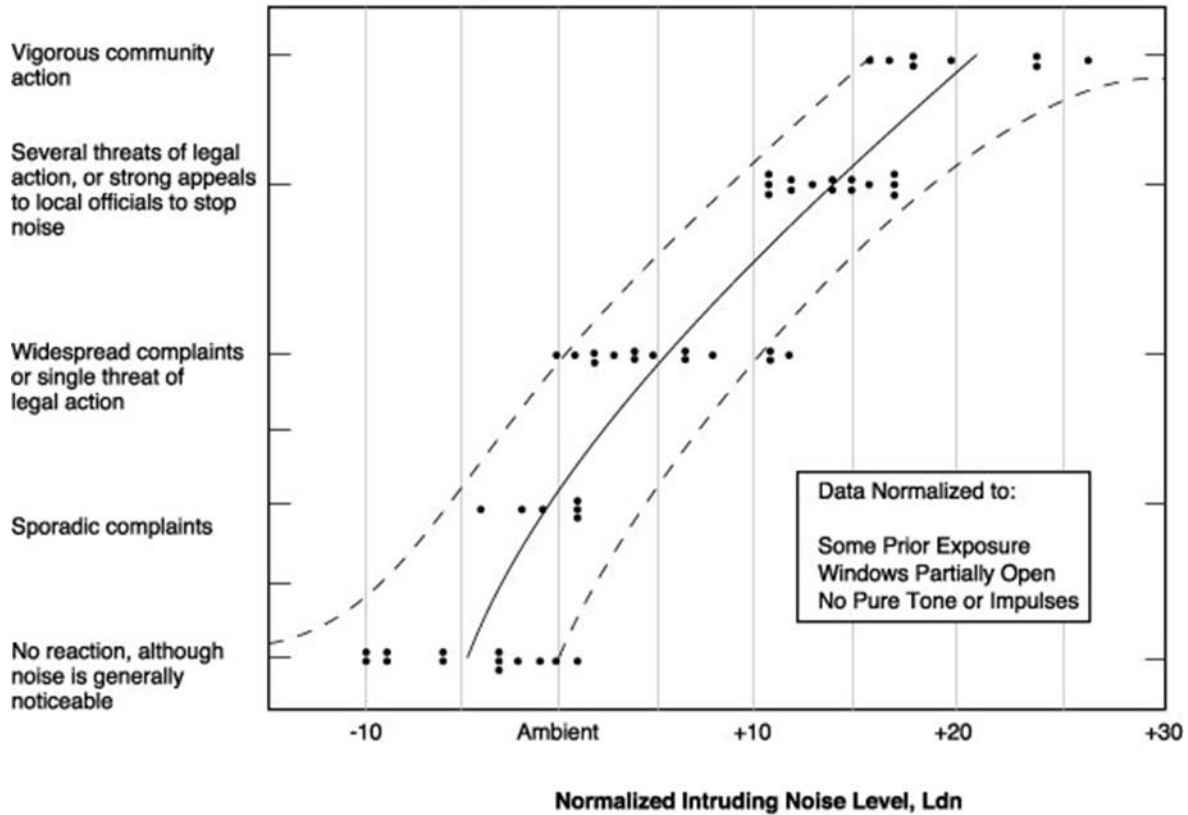
Source: FICON. "Federal Agency Review of Selected Airport Noise Analysis Issues." August 1992. (From data provided by USAF Armstrong Laboratory). pp. 3-6.

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

**Community Reaction**



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,  $L_{eq}$ , which would be 5 dB lower than the existing daytime background  $L_{eq}$  of 57 dBA.



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## 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



Source: Massport, HMMH

## 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.

**Figure D-14: Image from Site 2 Facing toward the North Apron**





### 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 positioned 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.

**Figure D-15: Image from Site 3 Facing toward the North Cargo Ramp**





## 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**

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

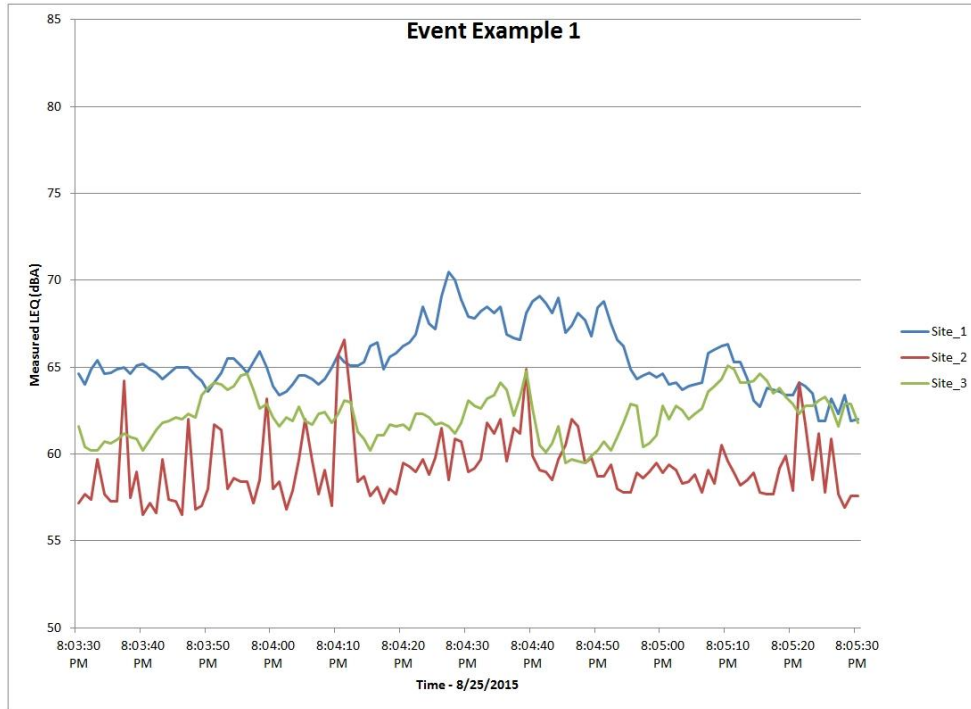
During the two days of community noise measurements (August, 25 2015 to August, 26 2015) aircraft-related ground noise was only occasionally audible and when audible, it was often not the loudest noise source. Non-aircraft noise sources at Site 2 and Site 3, such as traffic, trains, and recreational 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.

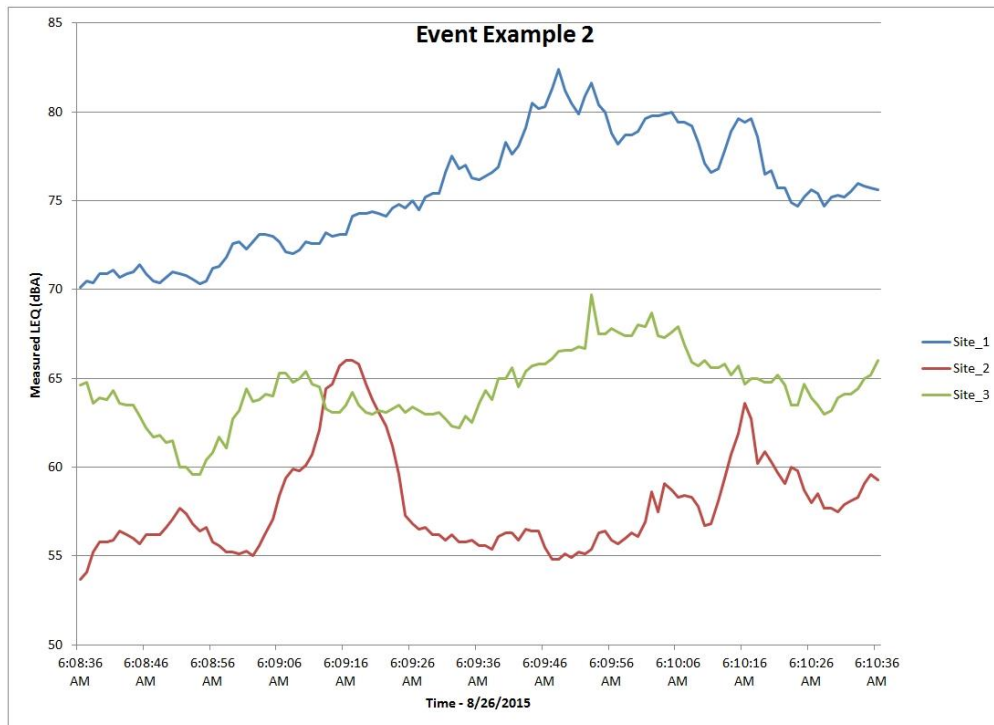
Event example 1 (shown on **Figure D-16**) presents the measured data at each site for a noise event occurring around 8:04 PM on August 25, 2015. Logs from the measurement team at Site 1 indicate that this noise event was caused by an aircraft on the North Apron being towed from the ramp. The auxiliary 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.

Figure D-18: Full Duration of Measurements on August 25, 2015

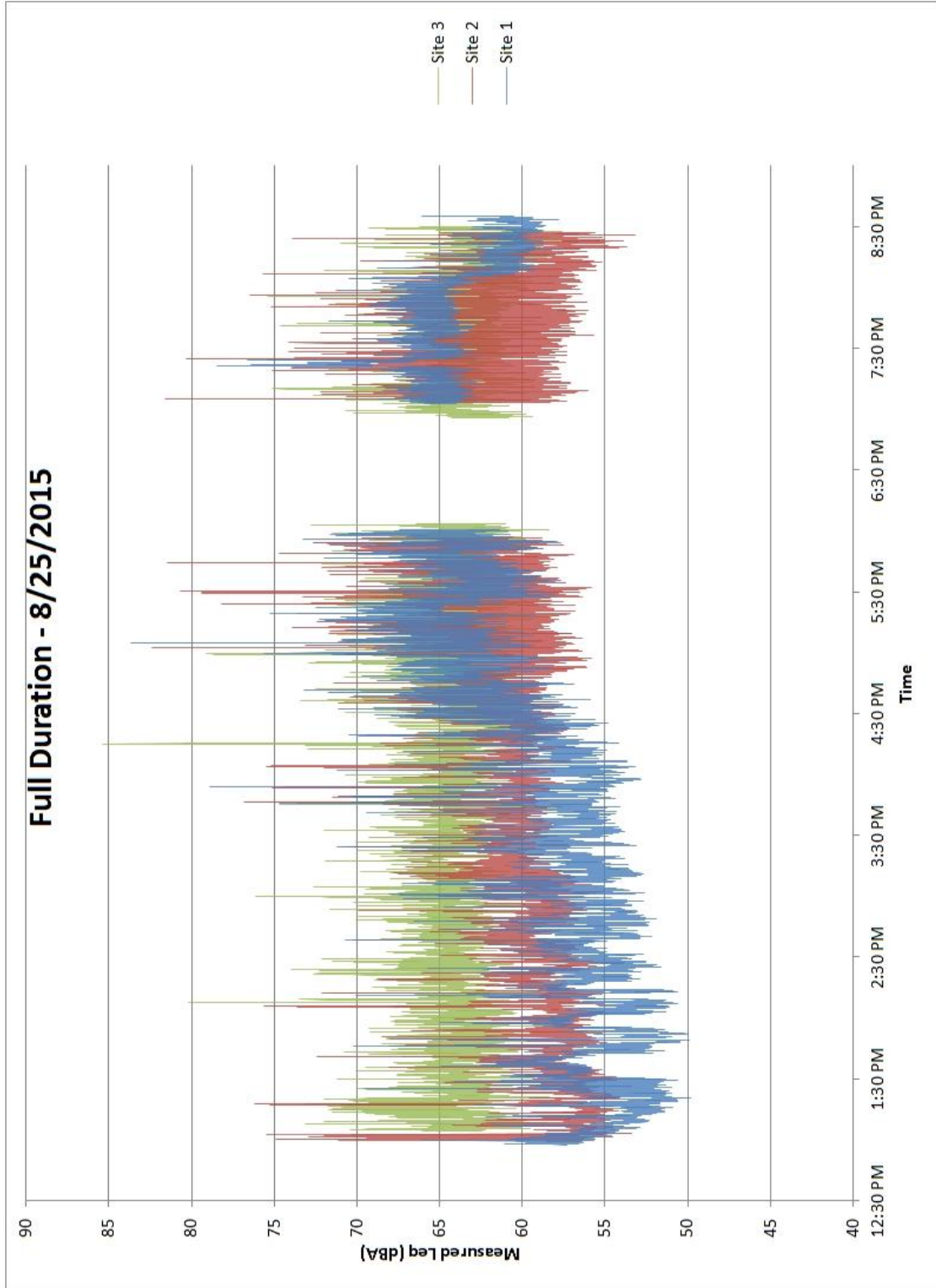
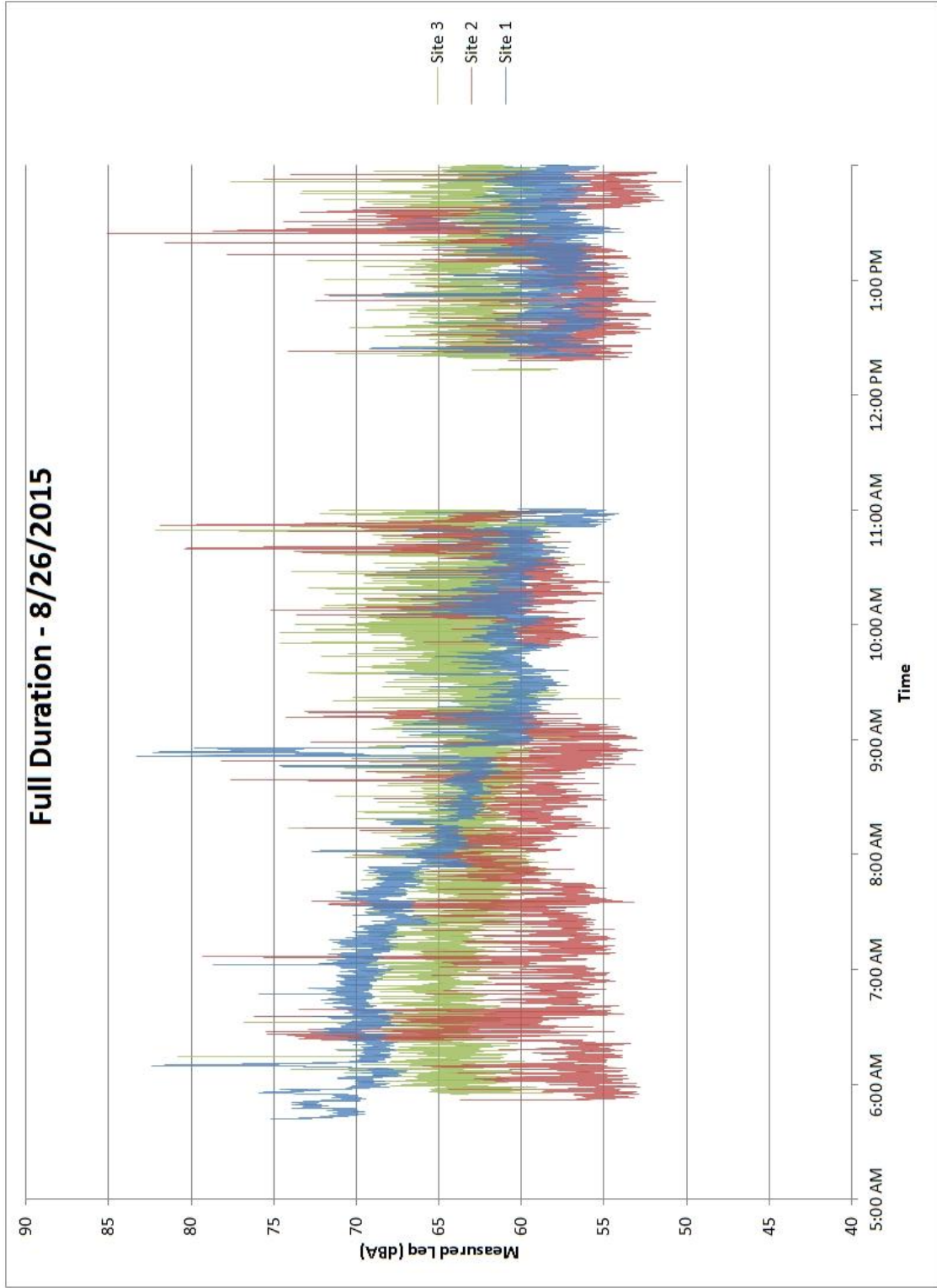


Figure D-19: Full Duration of Measurements on August 26, 2015





# Noise Modeling Methodology





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## HMMH

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### TECHNICAL MEMORANDUM

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**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

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#### 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<sup>®</sup> model<sup>1</sup>, combined with field evaluation through on-site noise measurements, to perform the acoustical modeling for this project. The SoundPLAN<sup>®</sup> computer model is a widely accepted tool for computing outdoor sound levels associated with ground-based noise sources. SoundPLAN<sup>®</sup> 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.

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<sup>1</sup> SoundPLAN<sup>®</sup> Version 7.4 is the current release. Documentation provided in SoundPLAN<sup>®</sup> 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

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

SoundPLAN<sup>1</sup> 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).<sup>2</sup> 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<sup>1</sup> 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<sup>1</sup>. In addition, unlike SoundPLAN<sup>1</sup>, INM and AEDT 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.

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<sup>2</sup> ÖAL-Richtlinie 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 well-developed 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.

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### 3. METHODOLOGY

Although FAA Order 1050.1F<sup>3</sup> 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 DNL.

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<sup>®</sup> (Version 7.4), HMMH will construct 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<sup>®</sup> model described above, HMMH will compare 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](mailto:rmentzer@hmmh.com) or [bnicholas@hmmh.com](mailto:bnicholas@hmmh.com) or via phone at 781-229-0707.

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<sup>3</sup> 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

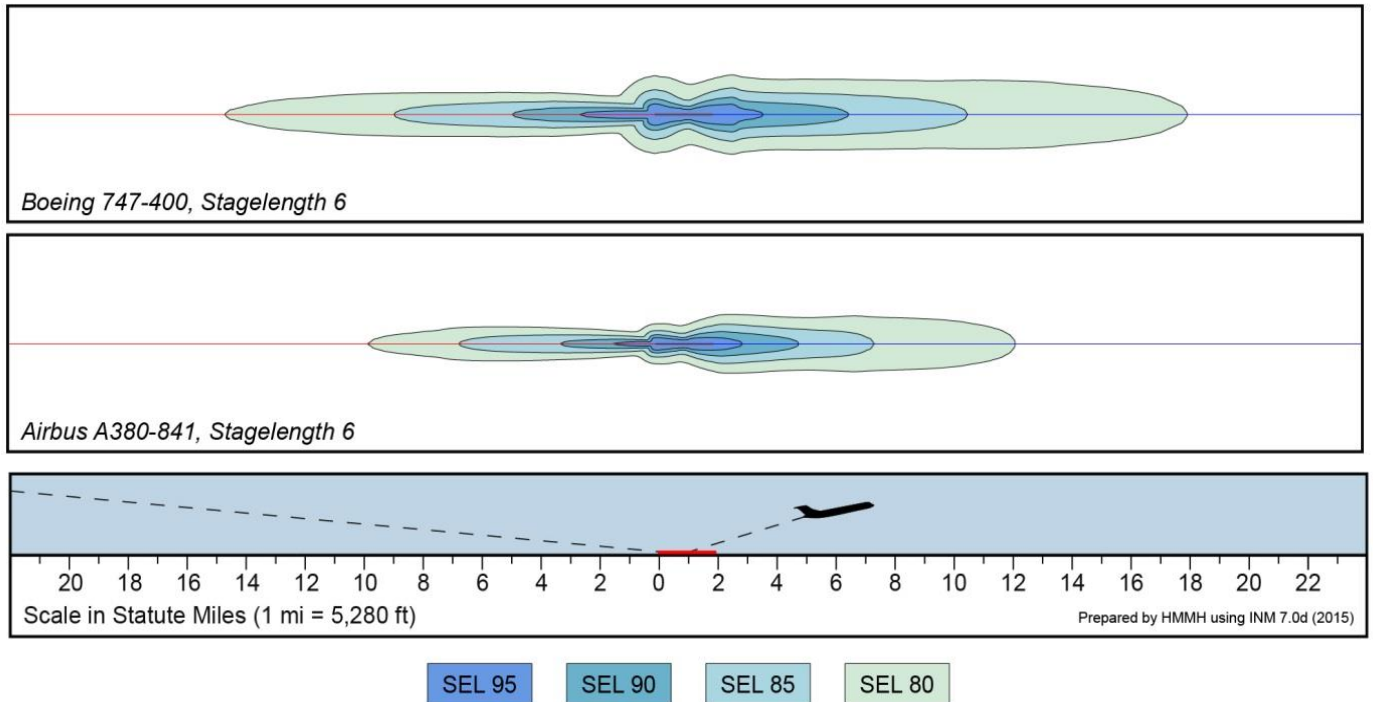
The aircraft fleet expected to be in use at Terminal E in the future conditions represent several new and efficient models than are in the fleet today. The Airbus A380, the Boeing 747-800, Airbus A321neo and the Boeing 737-800 MAX all represent a new group of efficient and quieter aircraft. The B747-400 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

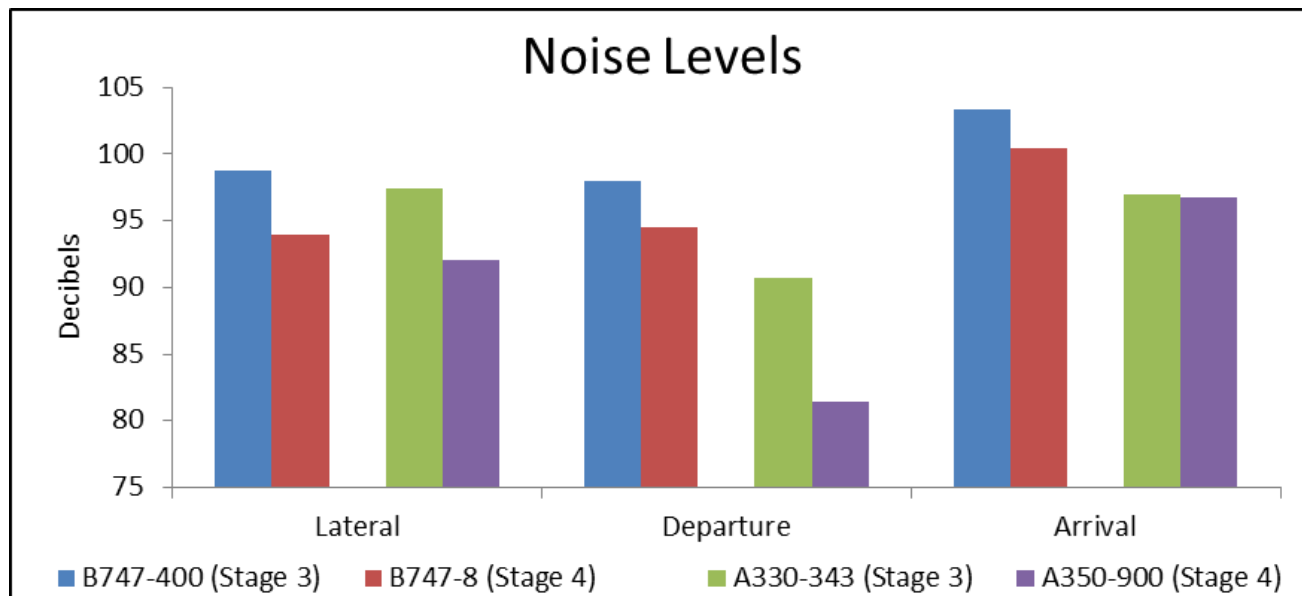


## Aircraft Comparison

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.

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.<sup>4</sup>

### 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.

<sup>4</sup> 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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PRECISION  
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File Name : 154582 AA  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Terminal E Lot 2  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Cars - Heavy Vehicles

Start Time	Gas Station Driveway From North				Arrivals Level Service Road From East				Terminal E Lot 2 From South				Arrivals Level Service Road From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
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

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Terminal E Lot 2 From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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



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Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Terminal E Lot 2  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Cars

Start Time	Gas Station Driveway From North				Arrivals Level Service Road From East				Terminal E Lot 2 From South				Arrivals Level Service Road From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
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	

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Terminal E Lot 2 From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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



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Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Terminal E Lot 2  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

**Groups Printed- Heavy Vehicles**

Start Time	Gas Station Driveway From North				Arrivals Level Service Road From East				Terminal E Lot 2 From South				Arrivals Level Service Road From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
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
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>56</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>59</b>
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
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>50</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>53</b>
<b>Grand Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>106</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>112</b>
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	

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Terminal E Lot 2 From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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



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File Name : 154582 AA  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Terminal E Lot 2  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Peds and Bikes

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Terminal E Lot 2 From South					Arrivals Level Service Road From West					Int. Total
	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	
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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	

Start Time	Gas Station Driveway From North						Arrivals Level Service Road From East						Terminal E Lot 2 From South						Arrivals Level Service Road From West						Int. Total							
	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								
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																																
Peak Hour for Entire Intersection Begins at 05:00 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	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	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	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	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	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		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	.000	.000	.000	.250	.000	.475		



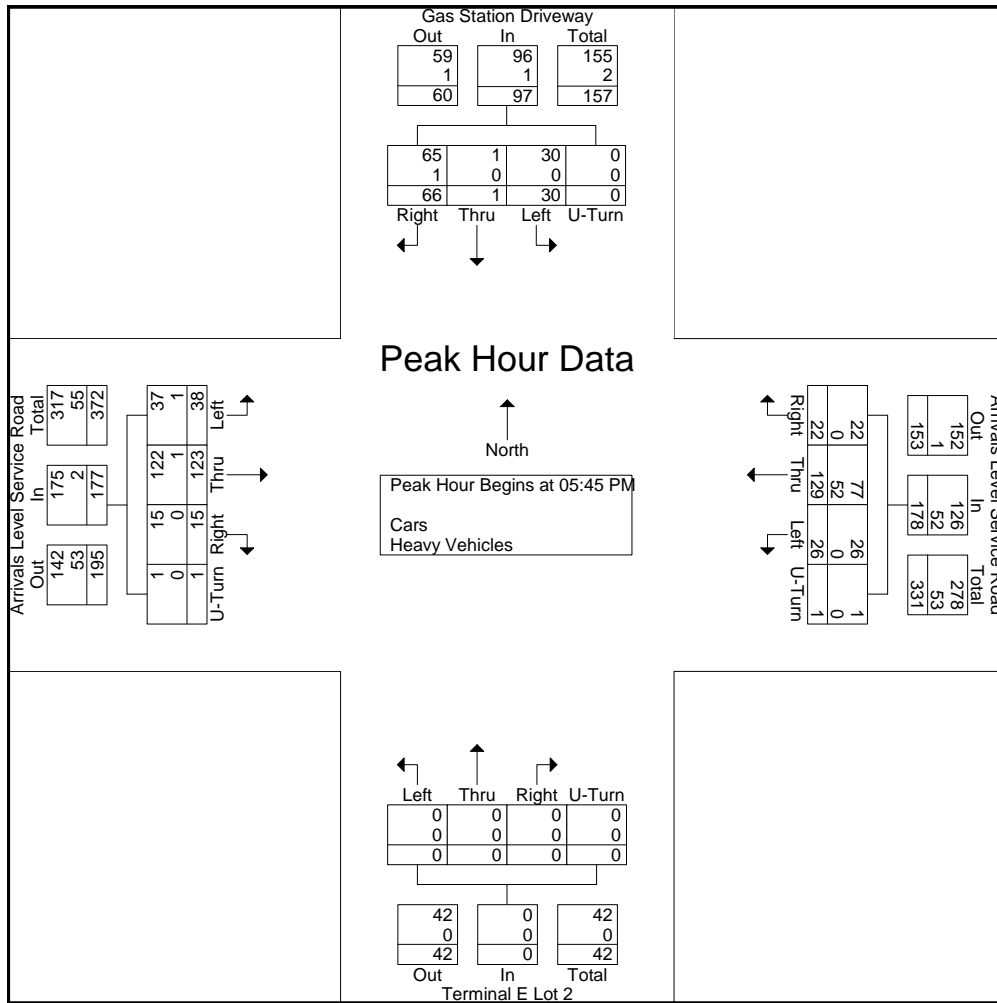
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N/S: Gas Station / Terminal E Lot 2  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

File Name : 154582 AA  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Terminal E Lot 2 From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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







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File Name : 154582 BB  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Parking Lot Exit  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Cars - Heavy Vehicles

Start Time	Gas Station Driveway From North				Arrivals Level Service Road From East				Parking Lot Exit From South				Arrivals Level Service Road From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
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	0.8	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

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Parking Lot Exit From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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



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File Name : 154582 BB  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Parking Lot Exit  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Cars

Start Time	Gas Station Driveway From North				Arrivals Level Service Road From East				Parking Lot Exit From South				Arrivals Level Service Road From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
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	

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Parking Lot Exit From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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



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File Name : 154582 BB  
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Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Parking Lot Exit  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

**Groups Printed- Heavy Vehicles**

Start Time	Gas Station Driveway From North				Arrivals Level Service Road From East				Parking Lot Exit From South				Arrivals Level Service Road From West				Int. Total
	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	Right	Thru	Left	U-Turn	
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
<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>97</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>99</b>
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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>92</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>94</b>
<b>Grand Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>189</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>193</b>
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	

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Parking Lot Exit From South					Arrivals Level Service Road From West					Int. Total
	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	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins 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



PRECISION  
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

File Name : 154582 BB  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N/S: Gas Station / Parking Lot Exit  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Peds and Bikes

Start Time	Gas Station Driveway From North					Arrivals Level Service Road From East					Parking Lot Exit From South					Arrivals Level Service Road From West					Int. Total					
	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						
05:00 PM	0	0	0	2	1	0	0	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	0	0	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	0	0	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	0	0	0	0	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	0	0	0	0	0	10
06:00 PM	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	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	0	0	0	0	0	6
Grand Total	0	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16
Apprch %	0	0	0	50	50	0	0	0	0	0	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	0	0	0	0	0	

Start Time	Gas Station Driveway From North						Arrivals Level Service Road From East						Parking Lot Exit From South						Arrivals Level Service Road From West						Int. Total						
	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							
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1																															
Peak Hour for Entire Intersection Begins at 05:00 PM																															
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	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	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	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	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	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		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	.000	.000	.000	.000	.000	.625	





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INDUSTRIES, LLC

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File Name : 154582 CC  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N: UPS Driveway  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Groups Printed- Cars - Heavy Vehicles

Start Time	UPS Driveway From North			Arrivals Level Service Road From East			Arrivals Level Service Road From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
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

Start Time	UPS Driveway From North				Arrivals Level Service Road From East				Arrivals Level Service Road From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection 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



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File Name : 154582 CC  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N: UPS Driveway  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

**Groups Printed- Cars**

Start Time	UPS Driveway From North			Arrivals Level Service Road From East			Arrivals Level Service Road From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
05:00 PM	0	0	0	0	43	0	22	0	0	65
05:15 PM	1	1	0	2	35	0	19	0	0	58
05:30 PM	1	2	0	2	45	0	21	1	0	72
05:45 PM	3	0	0	1	46	0	21	0	0	71
<b>Total</b>	<b>5</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>169</b>	<b>0</b>	<b>83</b>	<b>1</b>	<b>0</b>	<b>266</b>
06:00 PM	1	2	0	5	38	0	15	0	0	61
06:15 PM	2	5	0	3	43	1	20	1	0	75
06:30 PM	2	0	0	0	30	1	32	2	0	67
06:45 PM	2	1	0	3	31	6	26	1	0	70
<b>Total</b>	<b>7</b>	<b>8</b>	<b>0</b>	<b>11</b>	<b>142</b>	<b>8</b>	<b>93</b>	<b>4</b>	<b>0</b>	<b>273</b>
<b>Grand Total</b>	<b>12</b>	<b>11</b>	<b>0</b>	<b>16</b>	<b>311</b>	<b>8</b>	<b>176</b>	<b>5</b>	<b>0</b>	<b>539</b>
Apprch %	52.2	47.8	0	4.8	92.8	2.4	97.2	2.8	0	
Total %	2.2	2	0	3	57.7	1.5	32.7	0.9	0	

Start Time	UPS Driveway From North				Arrivals Level Service Road From East				Arrivals Level Service Road From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection 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
<b>Total Volume</b>	<b>7</b>	<b>9</b>	<b>0</b>	<b>16</b>	<b>11</b>	<b>172</b>	<b>1</b>	<b>184</b>	<b>77</b>	<b>2</b>	<b>0</b>	<b>79</b>	<b>279</b>
<b>% App. Total</b>	<b>43.8</b>	<b>56.2</b>	<b>0</b>	<b></b>	<b>6</b>	<b>93.5</b>	<b>0.5</b>	<b></b>	<b>97.5</b>	<b>2.5</b>	<b>0</b>	<b></b>	<b></b>
PHF	.583	.450	.000	.571	.550	.935	.250	.979	.917	.500	.000	.898	.930



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File Name : 154582 CC  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N: UPS Driveway  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

**Groups Printed- Heavy Vehicles**

Start Time	UPS Driveway From North			Arrivals Level Service Road From East			Arrivals Level Service Road From West			Int. Total
	Right	Left	U-Turn	Right	Thru	U-Turn	Thru	Left	U-Turn	
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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>112</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>112</b>
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
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>116</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>118</b>
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>228</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>230</b>
Apprch %	0	0	0	0	100	0	100	0	0	
Total %	0	0	0	0	99.1	0	0.9	0	0	

Start Time	UPS Driveway From North				Arrivals Level Service Road From East				Arrivals Level Service Road From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins 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
<b>Total Volume</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>116</b>	<b>0</b>	<b>116</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>118</b>
<b>% App. Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>100</b>	<b>0</b>	<b>100</b>	<b>100</b>	<b>0</b>	<b>0</b>	<b>0</b>	
PHF	.000	.000	.000	.000	.000	.784	.000	.784	.250	.000	.000	.250	.756





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File Name : 154582 CC  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N: UPS Driveway  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

**Groups Printed- Peds and Bikes**

Start Time	UPS Driveway From North				Arrivals Level Service Road From East				Arrivals Level Service Road From West				Int. Total
	Right	Left	Peds EB	Peds WB	Right	Thru	Peds SB	Peds NB	Thru	Left	Peds NB	Peds SB	
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	

Start Time	UPS Driveway From North					Arrivals Level Service Road From East				Arrivals Level Service Road From West				Int. Total	
	Right	Left	Peds EB	Peds WB	App. Total	Right	Thru	Peds SB	Peds NB	App. Total	Thru	Left	Peds NB		Peds SB
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1															
Peak Hour for Entire Intersection Begins at 06:00 PM															
06:00 PM	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
06:30 PM	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	1
Total Volume	0	0	0	1	1	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	.250



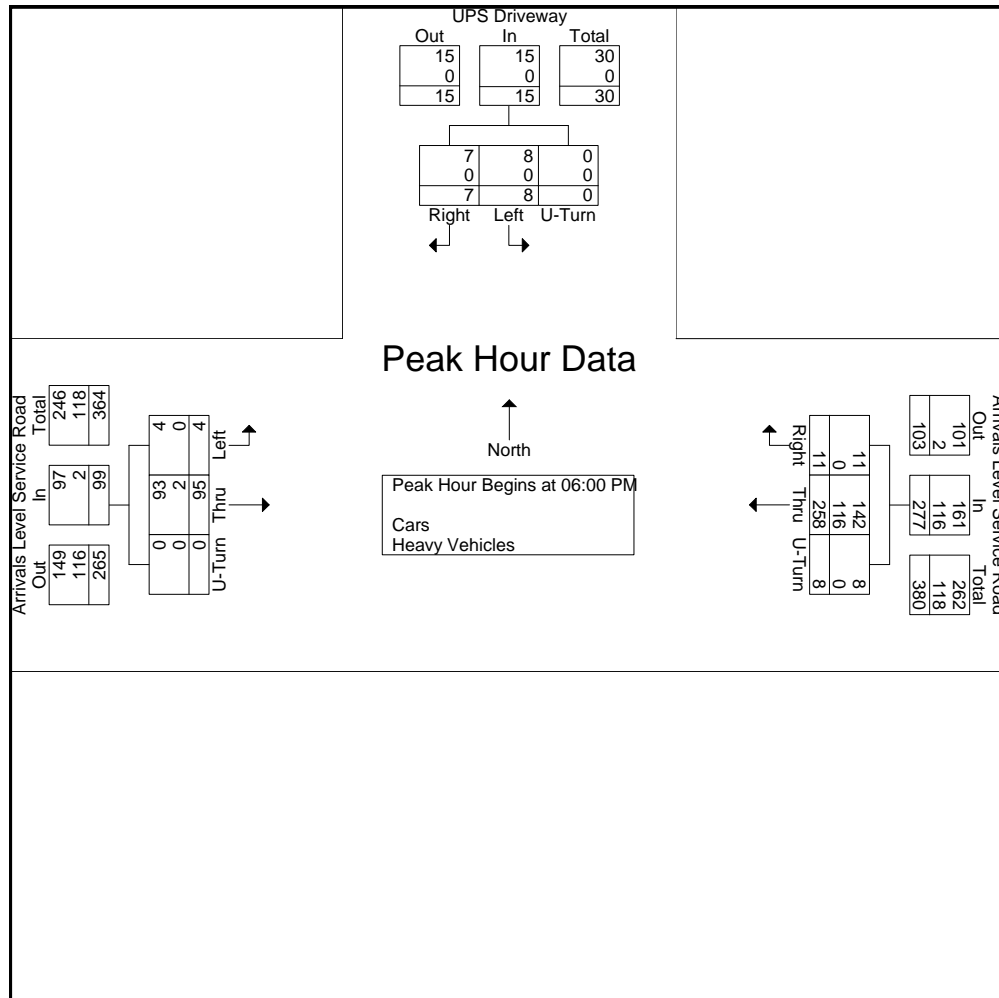
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D A T A  
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File Name : 154582 CC  
Site Code : 13220.00  
Start Date : 8/16/2015  
Page No : 1

N: UPS Driveway  
E/W: Arrivals Level Service Road  
City, State: Boston, MA  
Client: VHB/ A. Costa

Start Time	UPS Driveway From North				Arrivals Level Service Road From East				Arrivals Level Service Road From West				Int. Total
	Right	Left	U-Turn	App. Total	Right	Thru	U-Turn	App. Total	Thru	Left	U-Turn	App. Total	
Peak Hour Analysis From 05:00 PM to 06:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection 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



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



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INDUSTRIES, LLC

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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



PRECISION  
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 A Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/16/15	0	0	72	0	10	0	0	82
01:00	0	0	27	1	9	0	0	37
02:00	0	0	11	1	3	0	0	15
03:00	0	0	8	1	3	0	0	12
04:00	0	0	2	0	4	1	0	7
05:00	0	0	31	1	8	0	0	40
06:00	0	0	41	1	20	1	0	63
07:00	0	0	60	3	21	0	0	84
08:00	0	0	76	3	26	0	0	105
09:00	0	0	27	0	26	0	0	53
10:00	0	0	23	3	24	1	0	51
11:00	0	0	50	1	21	0	0	72
12 PM	0	0	158	4	22	0	0	184
13:00	0	0	266	5	28	0	0	299
14:00	0	0	371	4	30	0	0	405
15:00	0	0	289	3	26	1	0	319
16:00	0	0	224	6	30	2	0	262
17:00	0	0	234	4	25	0	0	263
18:00	0	0	500	15	25	0	0	540
19:00	0	0	436	9	17	0	0	462
20:00	0	0	367	10	24	0	0	401
21:00	0	0	240	1	24	0	0	265
22:00	0	0	106	7	14	0	0	127
23:00	0	0	86	3	14	0	0	103
Total	0	0	3705	86	454	6	0	4251
Percent	0.0%	0.0%	87.2%	2.0%	10.7%	0.1%	0.0%	0.0%
AM Peak			08:00	07:00	08:00	04:00		08:00
Vol.			76	3	26	1		105
PM Peak			18:00	18:00	14:00	16:00		18:00
Vol.			500	15	30	2		540

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



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Entrance  
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City, State: Boston, MA  
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154582 ATR A Volume  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	NB				Sat 15-Aug- 15
	A.M.		P.M.		
12:00	15		25		
12:15	7		40		
12:30	11		52		
12:45	8	41	43	160	
01:00	5		72		
01:15	12		73		
01:30	19		79		
01:45	32	68	63	287	
02:00	20		77		
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		83		
08:45	18	92	59	331	
09:00	18		57		
09:15	9		50		
09:30	15		92		
09:45	17	59	121	320	
10:00	20		81		
10:15	20		71		
10:30	12		82		
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			100.0%	0.0%	0.0%
Day Total		4317			
Peak	07:45	-	02:15	-	-
Vol.	94	-	431	-	-
P.H.F.	0.870		0.792		

Terminal E Arrival Level Entrance  
north of Terminal Area Roadway  
City, State: Boston, MA  
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154582 ATR A Volume  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	NB				Sun 16-Aug-15
	A.M.		P.M.		
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	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			100.0%	0.0%	0.0%
Day Total		4251			
Peak	07:45	-	06:00	-	-
Vol.	106	-	540	-	-
P.H.F.	0.883		0.944		



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



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

Start Time	NB													
A.M.	P.M.													
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												
02:45	3	7	67	331										
03:00	3	82												
03:15	2	88												
03:30	2	87												
03:45	3	10	71	328										
04:00	4	70												
04:15	7	59												
04:30	10	80												
04:45	3	24	74	283										
05:00	5	69												
05:15	12	87												
05:30	11	80												
05:45	12	40	78	314										
06:00	18	97												
06:15	20	100												
06:30	24	104												
06:45	17	79	115	416										
07:00	24	120												
07:15	30	97												
07:30	37	126												
07:45	18	109	127	470										
08:00	39	101												
08:15	35	112												
08:30	26	97												
08:45	16	116	72	382										
09:00	20	76												
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	689	3578												
Percent		100.0%	0.0%	0.0%										
Day Total		4267												
Peak	07:30	-	07:00	-	-	-	-	-	-	-	-	-	-	-
Vol.	129	-	470	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.827		0.925											

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



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

Start Time	NB				Tue 18-Aug-15
	A.M.		P.M.		
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		76		
02:15	3		86		
02:30	4		97		
02:45	0	8	73	332	
03:00	5		57		
03:15	2		59		
03:30	3		53		
03:45	0	10	51	220	
04:00	3		49		
04:15	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		118		
08:15	29		121		
08:30	33		111		
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		4265			
Peak	06:15	-	06:15	-	-
Vol.	127	-	502	-	-
P.H.F.	0.794		0.854		

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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.		1	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

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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154582 ATR B VOLUME  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	NB				Sat 15-Aug-15
	A.M.		P.M.		
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		26		
03:15	12		23		
03:30	2		21		
03:45	6	26	31	101	
04:00	6		33		
04:15	15		22		
04:30	10		29		
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		
09:15	17		52		
09:30	13		24		
09:45	18	59	34	163	
10:00	20		29		
10:15	15		25		
10:30	20		32		
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			100.0%	0.0%	0.0%
Day Total		2087			
Peak	10:45	-	08:15	-	-
Vol.	97	-	217	-	-
P.H.F.	0.866		0.889		

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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154582 ATR B VOLUME  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	NB														Sun 16-Aug- 15	
	A.M.		P.M.													
12:00	20		19													
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	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		25													
04:15	13		22													
04:30	10		26													
04:45	11	40	22	95												
05:00	9		24													
05:15	12		23													
05:30	10		25													
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		23													
10:15	14		14													
10:30	16		22													
10:45	16	70	31	90												
11:00	21		19													
11:15	26		16													
11:30	19		25													
11:45	24	90	18	78												
Total	711		1208													
Percent			100.0%		0.0%		0.0%									
Day Total			1919													
Peak	07:30	-	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	97	-	161	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.808		0.629													



Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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154582 ATR B VOLUME  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	NB				Mon 17-Aug-15
	A.M.		P.M.		
12:00	10		26		
12:15	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		32		
02:15	7		27		
02:30	8		33		
02:45	3	22	22	114	
03:00	14		27		
03:15	7		21		
03:30	9		28		
03:45	10	40	27	103	
04:00	10		27		
04:15	6		23		
04:30	10		36		
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		31		
08:15	27		29		
08:30	24		24		
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			100.0%	0.0%	0.0%
Day Total		2192			
Peak	07:15	-	07:15	-	-
Vol.	123	-	143	-	-
P.H.F.	0.788		0.794		

Terminal E Arrival C-E Connector  
 at Badge Station  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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154582 ATR B VOLUME  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	NB				Tue 18-Aug-15
	A.M.		P.M.		
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		
01:45	5	41	21	108	
02:00	8		26		
02:15	8		28		
02:30	4		33		
02:45	5	25	35	122	
03:00	5		23		
03:15	6		21		
03:30	9		30		
03:45	9	29	27	101	
04:00	8		42		
04:15	6		30		
04:30	10		25		
04:45	12	36	34	131	
05:00	20		28		
05:15	20		31		
05:30	24		33		
05:45	24	88	34	126	
06:00	21		28		
06:15	28		39		
06:30	17		29		
06:45	18	84	30	126	
07:00	24		31		
07:15	28		56		
07:30	26		36		
07:45	27	105	36	159	
08:00	25		27		
08:15	23		23		
08:30	31		30		
08:45	27	106	54	134	
09:00	29		55		
09:15	28		32		
09:30	33		47		
09:45	24	114	31	165	
10:00	20		21		
10:15	29		27		
10:30	23		34		
10:45	17	89	24	106	
11:00	35		12		
11:15	24		24		
11:30	32		18		
11:45	27	118	11	65	
Total	916		1443		
Percent			100.0%	0.0%	0.0%
Day Total		2359			
Peak	11:00	-	08:45	-	-
Vol.	118	-	188	-	-
P.H.F.	0.843		0.855		

Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
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154582 ATR C Volume  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	EB				Sat 15-Aug- 15
	A.M.		P.M.		
12:00	3		3		
12:15	2		7		
12:30	4		4		
12:45	3	12	5	19	
01:00	0		4		
01:15	1		11		
01:30	6		12		
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	0		25		
03:45	2	2	17	107	
04:00	0		14		
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	0		17		
06:45	3	6	25	73	
07:00	3		44		
07:15	4		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		15		
10:15	2		22		
10:30	1		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			100.0%	0.0%	0.0%
Day Total		1029			
Peak	07:30	-	07:15	-	-
Vol.	21	-	186	-	-
P.H.F.	0.583		0.727		





Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



PRECISION  
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 INDUSTRIES, LLC

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

154582 ATR C Volume  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	A.M.	EB		P.M.											Mon 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											
01:30	2			21											
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										
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											
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											
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											
10:30	3			4											
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				100.0%		0.0%			0.0%						
Day Total				779											
Peak	07:00	-	07:00	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	44	-	106	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.917		0.616												

Terminal E Arrival Level Recirculation Roadway  
 East of Terminal E Arrival Level Exit  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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 INDUSTRIES, LLC

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154582 ATR C Volume  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	A.M.	EB		P.M.											Tue 18-Aug- 15
12:00	9			10											
12:15	3			7											
12:30	2			4											
12:45	1	15		13	34										
01:00	0			10											
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			15											
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			11											
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											
07:45	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											
09:30	1			18											
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											
11:45	7	24		5	25										
Total	192			851											
Percent				100.0%		0.0%				0.0%					
Day Total				1043											
Peak	07:45	-		07:45	-	-	-	-	-	-	-	-	-	-	-
Vol.	59	-		212	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.615			0.679											

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



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INDUSTRIES, LLC

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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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
Vol.		1	568	12	43	4	1	623

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/17/15	0	0	69	2	18	0	0	89
01:00	0	0	73	1	9	1	0	84
02:00	0	0	19	0	1	0	0	20
03:00	0	0	22	1	7	1	1	32
04:00	0	0	43	0	9	2	0	54
05:00	0	0	77	1	14	2	0	94
06:00	0	1	74	5	24	3	1	108
07:00	0	0	100	5	28	0	1	134
08:00	0	1	192	9	32	4	1	239
09:00	0	0	82	4	35	4	0	125
10:00	0	0	72	0	28	2	0	102
11:00	0	0	102	3	34	4	2	145
12 PM	0	0	164	10	30	1	0	205
13:00	0	0	297	10	32	2	0	341
14:00	0	0	353	10	40	2	1	406
15:00	0	0	342	14	41	2	0	399
16:00	0	1	311	9	41	3	0	365
17:00	0	0	307	3	36	1	0	347
18:00	0	0	290	12	31	1	0	334
19:00	0	0	532	18	38	1	1	590
20:00	0	0	536	2	41	1	0	580
21:00	0	0	460	1	46	1	2	510
22:00	0	0	197	2	27	1	0	227
23:00	0	0	226	1	25	1	0	253
Total	0	3	4940	123	667	40	10	5783
Percent	0.0%	0.1%	85.4%	2.1%	11.5%	0.7%	0.2%	0.0%
AM Peak		06:00	08:00	08:00	09:00	08:00	11:00	08:00
Vol.		1	192	9	35	4	2	239
PM Peak		16:00	20:00	19:00	21:00	16:00	21:00	19:00
Vol.		1	536	18	46	3	2	590

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



PRECISION  
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INDUSTRIES, LLC

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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/18/15	0	0	106	0	18	0	0	124
01:00	0	0	53	1	9	1	0	64
02:00	0	0	35	0	1	1	0	37
03:00	0	0	25	1	3	3	0	32
04:00	0	0	29	1	8	1	1	40
05:00	0	0	60	1	16	1	1	79
06:00	0	0	87	2	29	3	1	122
07:00	0	0	101	12	28	6	0	147
08:00	0	0	133	7	27	2	1	170
09:00	0	0	125	4	32	3	0	164
10:00	0	0	67	4	26	0	0	97
11:00	0	0	82	9	30	1	1	123
12 PM	0	0	102	8	31	5	1	147
13:00	0	0	209	7	31	3	1	251
14:00	0	0	344	8	34	2	0	388
15:00	0	0	273	5	35	0	0	313
16:00	0	0	249	4	35	1	0	289
17:00	0	0	338	6	40	3	0	387
18:00	0	0	434	9	37	2	0	482
19:00	0	0	482	4	43	0	0	529
20:00	0	0	499	3	40	1	0	543
21:00	0	0	546	2	42	8	1	599
22:00	0	0	290	2	29	0	0	321
23:00	0	0	244	3	26	0	0	273
Total	0	0	4913	103	650	47	8	5721
Percent	0.0%	0.0%	85.9%	1.8%	11.4%	0.8%	0.1%	0.0%
AM Peak			08:00	07:00	09:00	07:00	04:00	08:00
Vol.			133	12	32	6	1	170
PM Peak			21:00	18:00	19:00	21:00	12:00	21:00
Vol.			546	9	43	8	1	599

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



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

Start Time	SB																			Sat	
	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	38	64																			
02:30	24	102																			
02:45	19	120	136	383																	
03:00	14	109																			
03:15	8	90																			
03:30	6	111																			
03:45	14	42	108	418																	
04:00	8	108																			
04:15	7	137																			
04:30	14	115																			
04:45	14	43	100	460																	
05:00	14	70																			
05:15	13	53																			
05:30	19	86																			
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																			
09:15	20	179																			
09:30	21	110																			
09:45	32	103	133	570																	
10:00	27	149																			
10:15	29	154																			
10:30	25	132																			
10:45	29	110	111	546																	
11:00	27	63																			
11:15	19	63																			
11:30	29	72																			
11:45	21	96	115	313																	
Total	1086	4622																			
Percent		100.0%	0.0%	0.0%																	
Day Total		5708																			
Peak	08:00	-	09:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	174	-	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.630		0.797																		

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



PRECISION  
D A T A  
INDUSTRIES, LLC

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

Start Time	SB		P.M.															Sun	
	A.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		108																
02:15	3		137																
02:30	5		105																
02:45	8	31	134	484															
03:00	8		114																
03:15	10		92																
03:30	8		136																
03:45	2	28	84	426															
04:00	4		75																
04:15	15		111																
04:30	15		127																
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		51																
10:15	18		42																
10:30	16		93																
10:45	18	71	102	288															
11:00	18		72																
11:15	35		61																
11:30	22		28																
11:45	40	115	38	199															
Total	1124		4721																
Percent			100.0%	0.0%	0.0%														
Day Total		5845																	
Peak	12:00	-	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	230	-	623	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.523		0.950																



Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



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

Start Time	SB				Mon 17-Aug- 15
	A.M.		P.M.		
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		
02:30	3		81		
02:45	2	20	90	406	
03:00	9		98		
03:15	6		88		
03:30	9		122		
03:45	8	32	91	399	
04:00	10		87		
04:15	13		96		
04:30	15		91		
04:45	16	54	91	365	
05:00	17		103		
05:15	27		92		
05:30	26		87		
05:45	24	94	65	347	
06:00	32		83		
06:15	20		85		
06:30	28		79		
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			100.0%	0.0%	0.0%
Day Total		5783			
Peak	08:00	-	07:15	-	-
Vol.	239	-	622	-	-
P.H.F.	0.738		0.926		

Terminal E Arrival Level Exit Ramp  
to Airport Exit  
City, State: Boston, MA  
Client: VHB/ A. Costa



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Office: 508.481.3999 Fax: 508.545.1234  
Email: datarequests@pdillc.com

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

Start Time	SB				Tue 18-Aug-15
	A.M.		P.M.		
12:00	39		27		
12:15	40		29		
12:30	25		48		
12:45	20	124	43	147	
01:00	11		57		
01:15	25		52		
01:30	16		59		
01:45	12	64	83	251	
02:00	8		66		
02:15	13		92		
02:30	8		113		
02:45	8	37	117	388	
03:00	8		94		
03:15	10		66		
03:30	9		75		
03:45	5	32	78	313	
04:00	5		89		
04:15	9		81		
04:30	16		67		
04:45	10	40	52	289	
05:00	15		72		
05:15	30		96		
05:30	19		110		
05:45	15	79	109	387	
06:00	25		109		
06:15	25		116		
06:30	40		118		
06:45	32	122	139	482	
07:00	54		132		
07:15	44		119		
07:30	19		137		
07:45	30	147	141	529	
08:00	29		135		
08:15	47		113		
08:30	42		131		
08:45	52	170	164	543	
09:00	53		174		
09:15	41		159		
09:30	36		146		
09:45	34	164	120	599	
10:00	21		101		
10:15	26		105		
10:30	23		70		
10:45	27	97	45	321	
11:00	31		64		
11:15	33		48		
11:30	36		79		
11:45	23	123	82	273	
Total	1199		4522		
Percent			100.0%	0.0%	0.0%
Day Total		5721			
Peak	08:15	-	08:45	-	-
Vol.	194	-	643	-	-
P.H.F.	0.898		0.924		

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



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Email: datarequests@pdillc.com

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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/16/15	0	0	4	0	0	0	0	4
01:00	0	0	3	0	0	0	0	3
02:00	0	0	2	0	0	0	0	2
03:00	0	0	0	0	2	0	0	2
04:00	0	0	4	1	0	0	0	5
05:00	0	0	10	0	0	0	0	10
06:00	0	0	30	1	2	0	0	33
07:00	0	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 PM	0	0	13	0	1	0	0	14
13:00	0	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
20:00	0	0	66	2	2	0	0	70
21:00	0	0	32	0	0	0	0	32
22:00	0	0	11	1	0	0	0	12
23:00	0	0	0	0	0	0	0	0
Total	0	0	676	22	29	0	0	727
Percent	0.0%	0.0%	93.0%	3.0%	4.0%	0.0%	0.0%	0.0%
AM Peak			06:00	04:00	11:00			06:00
Vol.			30	1	4			33
PM Peak			18:00	18:00	18:00			18:00
Vol.			108	5	5			118

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



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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

Start Time	A.M.	SB	P.M.		Sat 15-Aug- 15
12:00	1		6		
12:15	3		7		
12:30	0		4		
12:45	1	5	7	24	
01:00	2		4		
01:15	1		7		
01:30	2		5		
01:45	0	5	8	24	
02:00	2		15		
02:15	0		13		
02:30	1		15		
02:45	0	3	11	54	
03:00	1		15		
03:15	0		12		
03:30	0		12		
03:45	1	2	10	49	
04:00	1		11		
04:15	1		16		
04:30	0		10		
04:45	1	3	8	45	
05:00	4		12		
05:15	2		9		
05:30	3		13		
05:45	6	15	16	50	
06:00	9		20		
06:15	6		18		
06:30	9		13		
06:45	10	34	21	72	
07:00	6		26		
07:15	0		23		
07:30	2		33		
07:45	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		6		
09:15	3		3		
09:30	0		5		
09:45	0	5	4	18	
10:00	2		6		
10:15	1		4		
10:30	3		3		
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			100.0%	0.0%	0.0%
Day Total		668			
Peak	06:00	-	07:00	-	-
Vol.	34	-	107	-	-
P.H.F.	0.850		0.811		

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



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

Start Time	SB				Sun 16-Aug- 15
	A.M.		P.M.		
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		27		
06:15	12		32		
06:30	10		23		
06:45	5	33	36	118	
07:00	3		28		
07:15	4		18		
07:30	7		28		
07:45	5	19	24	98	
08:00	5		14		
08:15	1		19		
08:30	3		17		
08:45	2	11	20	70	
09:00	3		12		
09:15	4		12		
09:30	0		6		
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	135		592		
Percent			100.0%	0.0%	0.0%
Day Total		727			
Peak	06:00	-	06:15	-	-
Vol.	33	-	119	-	-
P.H.F.	0.688		0.826		



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



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

Start Time	SB		P.M.																	Mon	
	A.M.																			24-Aug-	15
12:00	0		2																		
12:15	1		4																		
12:30	0		2																		
12:45	1	2	4	12																	
01:00	0		7																		
01:15	0		3																		
01:30	0		9																		
01:45	0	0	12	31																	
02:00	0		13																		
02:15	0		11																		
02:30	0		10																		
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		22																		
07:15	3		29																		
07:30	1		24																		
07:45	4	13	24	99																	
08:00	4		20																		
08:15	1		10																		
08:30	4		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			100.0%	0.0%	0.0%																
Day Total			685																		
Peak	05:30	-	07:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	29	-	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.659		0.853																		



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



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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%
AM Peak			11:00	00:00	10:00	03:00		11:00
Vol.			44	4	29	1		74
PM Peak			19:00	18:00	18:00	18:00		19:00
Vol.			150	7	41	2		188

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



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

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



PRECISION  
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INDUSTRIES, LLC

P.O. Box 301 Berlin, MA 01503  
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154582 F CLASS Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Departures Level Exit Ramp  
to Service Road  
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154582 F CLASS Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

SB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Departures Level Exit Ramp  
to Service Road  
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154582 ATR F VOLUME  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	SB				Sat 15-Aug- 15
	A.M.		P.M.		
12:00	4		17		
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		
02:15	2		24		
02:30	5		37		
02:45	4	13	37	130	
03:00	3		25		
03:15	5		30		
03:30	7		24		
03:45	7	22	26	105	
04:00	4		21		
04:15	4		33		
04:30	8		25		
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		28		
09:15	11		25		
09:30	17		18		
09:45	15	55	15	86	
10:00	10		13		
10:15	13		8		
10:30	18		11		
10:45	13	54	11	43	
11:00	20		7		
11:15	20		11		
11:30	15		5		
11:45	19	74	11	34	
Total	484		1325		
Percent			100.0%	0.0%	0.0%
Day Total		1809			
Peak	11:00	-	06:15	-	-
Vol.	74	-	189	-	-
P.H.F.	0.925		0.926		

Terminal E Departures Level Exit Ramp  
to Service Road  
City, State: Boston, MA  
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154582 ATR F VOLUME  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	SB		P.M.																Sun	
	A.M.																		16-Aug-	15
12:00	11		18																	
12:15	11		14																	
12:30	6		25																	
12:45	3	31	16	73																
01:00	5		19																	
01:15	3		17																	
01:30	3		27																	
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		38																	
07:15	8		49																	
07:30	21		54																	
07:45	8	51	49	190																
08:00	7		42																	
08:15	13		39																	
08:30	7		51																	
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			100.0%	0.0%	0.0%															
Day Total		1888																		
Peak	11:00	-	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	72	-	194	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.947		0.898																	



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



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

Start Time	SB		P.M.																	Mon	
	A.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		38																		
03:15	4		32																		
03:30	5		47																		
03:45	6	19	33	150																	
04:00	6		32																		
04:15	7		29																		
04:30	9		36																		
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		20																		
09:15	9		25																		
09:30	19		11																		
09:45	16	55	15	71																	
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			100.0%	0.0%	0.0%																
Day Total		1936																			
Peak	11:00	-	06:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	68	-	208	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.850		0.963																		



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



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INDUSTRIES, LLC

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

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/15/15	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

Terminal E Arrival Level Entrance  
north of Terminal Area Roadway  
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154582 ATR G Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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		18:00
Vol.			112	7	52	4		165

Terminal E Arrival Level Entrance  
north of Terminal Area Roadway  
City, State: Boston, MA  
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154582 ATR G Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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
Percent	0.0%	0.1%	52.4%	9.3%	35.4%	2.6%	0.1%	0.0%
AM Peak		00:00	08:00	07:00	11:00	07:00	02:00	11:00
Vol.		1	58	21	49	10	1	125
PM Peak		12:00	18:00	15:00	16:00	12:00	15:00	18:00
Vol.		1	113	17	51	6	1	171

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



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

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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P.O. Box 301 Berlin, MA 01503  
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Email: datarequests@pdillc.com

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

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Entrance  
north of Terminal Area Roadway  
City, State: Boston, MA  
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154582 ATR G Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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



Terminal E Arrival Level Entrance  
north of Terminal Area Roadway  
City, State: Boston, MA  
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154582 ATR G Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Entrance  
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154582 ATR G Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

EB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Entrance  
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154582 ATR G Volume  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	WB		EB		Combin ed		15-Aug-15 Sat							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
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	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	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	130	2	15	30	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	244							
04:00	7	31	5	23	12	54								
04:15	12	37	3	19	15	56								
04:30	11	33	8	22	19	55								
04:45	12	42	33	134	17	33	220							
05:00	11	37	12	26	23	63								
05:15	14	32	11	30	25	62								
05:30	17	36	17	24	34	60								
05:45	10	52	28	133	11	51	232							
06:00	16	31	13	28	29	59								
06:15	18	35	8	42	26	77								
06:30	16	29	13	29	29	58								
06:45	16	66	28	123	18	52	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	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	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	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	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	140							
Total	752	1506	516	1215	1268	2721								
Percent	59.3%	55.3%	40.7%	44.7%										
Day Total		2258		1731		3989								
Peak Vol.	10:30	-	07:00	-	06:45	-	07:15	-	10:45	-	07:15	-	-	-
P.H.F.	0.917	-	0.844	-	0.804	-	0.963	-	0.924	-	0.974	-	-	-

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



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

Start Time	WB		EB		Combin ed		16-Aug-15 Sun						
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.							
12:00	24	18	14	19	38	37							
12:15	23	31	18	7	41	38							
12:30	22	27	7	13	29	40							
12:45	16	85	20	96	14	53	23	62	30	138	43	158	
01:00	17	16	6	18	23	34							
01:15	14	25	6	23	20	48							
01:30	16	28	3	17	19	45							
01:45	17	64	26	95	10	25	20	78	27	89	46	173	
02:00	8	26	8	30	16	56							
02:15	7	26	1	29	8	55							
02:30	5	25	4	26	9	51							
02:45	10	30	32	109	7	20	51	136	17	50	83	245	
03:00	10	30	3	23	13	53							
03:15	7	37	6	29	13	66							
03:30	10	29	5	32	15	61							
03:45	9	36	29	125	3	17	21	105	12	53	50	230	
04:00	7	38	2	27	9	65							
04:15	9	31	11	34	20	65							
04:30	8	35	13	30	21	65							
04:45	8	32	28	132	9	35	32	123	17	67	60	255	
05:00	8	36	6	25	14	61							
05:15	18	40	13	35	31	75							
05:30	13	37	5	24	18	61							
05:45	15	54	40	153	7	31	41	125	22	85	81	278	
06:00	15	48	14	37	29	85							
06:15	16	51	13	34	29	85							
06:30	16	38	20	41	36	79							
06:45	19	66	28	165	14	61	38	150	33	127	66	315	
07:00	12	35	14	33	26	68							
07:15	13	49	8	32	21	81							
07:30	12	23	16	55	28	78							
07:45	21	58	33	140	11	49	45	165	32	107	78	305	
08:00	22	53	8	45	30	98							
08:15	20	26	11	57	31	83							
08:30	24	40	16	52	40	92							
08:45	21	87	34	153	11	46	45	199	32	133	79	352	
09:00	16	37	10	30	26	67							
09:15	22	32	12	29	34	61							
09:30	17	31	12	50	29	81							
09:45	18	73	27	127	9	43	14	123	27	116	41	250	
10:00	22	20	10	17	32	37							
10:15	20	27	9	11	29	38							
10:30	19	20	11	18	30	38							
10:45	20	81	26	93	14	44	20	66	34	125	46	159	
11:00	27	26	14	13	41	39							
11:15	15	21	16	16	31	37							
11:30	22	21	15	7	37	28							
11:45	17	81	20	88	15	60	21	57	32	141	41	145	
Total	747	1476	484	1389	1231	2865							
Percent	60.7%	51.5%	39.3%	48.5%									
Day Total		2223		1873		4096							
Peak Vol.	07:45	-	05:45	-	06:00	-	07:30	-	10:45	-	08:00	-	-
P.H.F.	0.906	-	0.868	-	0.763	-	0.886	-	0.872	-	0.898	-	-

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



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

Start Time	WB		EB		Combin ed		17-Aug-15 Mon						
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.							
12:00	13	25	14	21	27	46							
12:15	17	23	17	24	34	47							
12:30	16	29	12	15	28	44							
12:45	13	59	34	111	9	52	86	22	111	60	197		
01:00	11	36	16	22	27	58							
01:15	12	32	21	31	33	63							
01:30	7	39	16	27	23	66							
01:45	15	45	34	141	13	66	35	115	28	111	69	256	
02:00	6	31	7	30	13	61							
02:15	9	36	2	31	11	67							
02:30	4	44	4	45	8	89							
02:45	7	26	27	138	2	15	50	156	9	41	77	294	
03:00	9	39	3	32	12	71							
03:15	6	51	4	25	10	76							
03:30	10	33	7	27	17	60							
03:45	10	35	33	156	6	20	34	118	16	55	67	274	
04:00	11	37	10	23	21	60							
04:15	11	34	11	23	22	57							
04:30	14	39	12	22	26	61							
04:45	11	47	47	157	14	47	25	93	25	94	72	250	
05:00	19	29	19	26	38	55							
05:15	17	35	25	27	42	62							
05:30	28	40	22	25	50	65							
05:45	20	84	34	138	17	83	21	99	37	167	55	237	
06:00	26	32	30	24	56	56							
06:15	25	41	25	32	50	73							
06:30	26	48	27	33	53	81							
06:45	24	101	50	171	23	105	28	117	47	206	78	288	
07:00	29	42	29	39	58	81							
07:15	35	49	25	40	60	89							
07:30	28	37	25	45	53	82							
07:45	32	124	41	169	23	102	54	178	55	226	95	347	
08:00	35	35	24	51	59	86							
08:15	28	45	26	33	54	78							
08:30	23	32	23	49	46	81							
08:45	25	111	35	147	18	91	44	177	43	202	79	324	
09:00	33	35	15	44	48	79							
09:15	26	37	13	28	39	65							
09:30	30	36	20	33	50	69							
09:45	26	115	33	141	22	70	21	126	48	185	54	267	
10:00	30	24	11	15	41	39							
10:15	25	28	10	16	35	44							
10:30	24	25	16	18	40	43							
10:45	26	105	24	101	10	47	10	59	36	152	34	160	
11:00	30	30	15	18	45	48							
11:15	32	24	22	18	54	42							
11:30	31	18	25	18	56	36							
11:45	32	125	26	98	21	83	11	65	53	208	37	163	
Total	977	1668	781	1389	1758	3057							
Percent	55.6%	54.6%	44.4%	45.4%									
Day Total		2645		2170		4815							
Peak	07:15	-	06:30	-	06:00	-	07:15	-	07:15	-	07:15	-	-
Vol.	130	-	189	-	105	-	190	-	227	-	352	-	-
P.H.F.	0.929		0.945		0.875		0.880		0.946		0.926		

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



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

Start Time	WB		EB		Combin ed		18-Aug-15 Tue						
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.							
12:00	22	34	28	23	50	57							
12:15	21	34	20	20	41	54							
12:30	18	36	13	26	31	62							
12:45	19	80	42	146	13	74	33	102	32	154	75	248	
01:00	9	39	7	26	16	65							
01:15	10	35	12	22	22	57							
01:30	16	35	9	29	25	64							
01:45	6	41	43	152	5	33	33	110	11	74	76	262	
02:00	6	37	6	30	12	67							
02:15	5	41	7	41	12	82							
02:30	9	35	10	32	19	67							
02:45	7	27	50	163	9	32	36	139	16	59	86	302	
03:00	9	34	4	37	13	71							
03:15	11	27	4	31	15	58							
03:30	7	44	3	31	10	75							
03:45	5	32	31	136	3	14	35	134	8	46	66	270	
04:00	10	37	8	33	18	70							
04:15	12	35	8	25	20	60							
04:30	9	36	12	28	21	64							
04:45	12	43	44	152	11	39	18	104	23	82	62	256	
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							
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							
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							
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							
11:45	41	158	29	90	13	67	18	74	54	225	47	164	
Total	1068	1817	747	1517	1815	3334							
Percent	58.8%	54.5%	41.2%	45.5%									
Day Total		2885		2264		5149							
Peak	11:00	-	06:45	-	06:30	-	07:30	-	07:00	-	07:15	-	-
Vol.	158	-	227	-	118	-	208	-	236	-	409	-	-
P.H.F.	0.898		0.757		0.843		0.945		0.922		0.905		

Terminal E Arrival Level Service Road  
 at Cell Phone Lot  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

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

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Service Road  
at Cell Phone Lot  
City, State: Boston, MA  
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154582 ATR H Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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



Terminal E Arrival Level Service Road  
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154582 ATR H Class  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Service Road  
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154582 ATR H Class  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

WB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Arrival Level Service Road  
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154582 ATR H Volume  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

Start Time	WB																		Sat	
	A.M.	P.M.																	15-Aug-15	
12:00	21		23																	
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																	
02:15	6		21																	
02:30	14		26																	
02:45	8	39	33	110																
03:00	12		24																	
03:15	10		30																	
03:30	10		25																	
03:45	15	47	22	101																
04:00	13		27																	
04:15	15		25																	
04:30	13		24																	
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																
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																
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		18																	
11:15	24		18																	
11:30	15		18																	
11:45	21	82	19	73																
Total	815		1184																	
Percent			100.0%		0.0%		0.0%													
Day Total			1999																	
Peak	06:15	-	06:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	94	-	120	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.839		0.909																	

Terminal E Arrival Level Service Road  
 at Cell Phone Lot  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

Start Time	WB				Sun 16-Aug- 15
	A.M.		P.M.		
12:00	13		22		
12:15	14		24		
12:30	14		24		
12:45	11	52	23	93	
01:00	13		22		
01:15	9		27		
01:30	12		25		
01:45	16	50	30	104	
02:00	10		22		
02:15	9		23		
02:30	9		26		
02:45	9	37	22	93	
03:00	12		38		
03:15	10		31		
03:30	12		28		
03:45	14	48	28	125	
04:00	11		22		
04:15	14		31		
04:30	19		30		
04:45	15	59	26	109	
05:00	17		33		
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			100.0%	0.0%	0.0%
Day Total		1976			
Peak	10:30	-	03:00	-	-
Vol.	94	-	125	-	-
P.H.F.	0.870		0.822		

Terminal E Arrival Level Service Road  
 at Cell Phone Lot  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

Start Time	WB		P.M.																		Mon	
	A.M.																					17-Aug-
12:00	8		30																			
12:15	18		23																			
12:30	15		24																			
12:45	12	53	31	108																		
01:00	9		27																			
01:15	11		28																			
01:30	13		35																			
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		29																			
04:15	18		26																			
04:30	21		29																			
04:45	13	66	37	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		22																			
08:15	24		25																			
08:30	27		24																			
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			100.0%		0.0%		0.0%															
Day Total			2389																			
Peak	10:45	-	02:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vol.	130	-	143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
P.H.F.	0.855		0.794																			

Terminal E Arrival Level Service Road  
 at Cell Phone Lot  
 City, State: Boston, MA  
 Client: VHB/ A. Costa



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

Start Time	WB				Tue 18-Aug-15
	A.M.		P.M.		
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		33		
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		30		
04:45	17	65	33	137	
05:00	20		41		
05:15	16		33		
05:30	23		32		
05:45	28	87	29	135	
06:00	37		28		
06:15	30		39		
06:30	24		31		
06:45	29	120	35	133	
07:00	27		23		
07:15	36		31		
07:30	39		34		
07:45	36	138	30	118	
08:00	17		33		
08:15	35		24		
08:30	30		23		
08:45	26	108	21	101	
09:00	30		18		
09:15	32		28		
09:30	29		24		
09:45	28	119	19	89	
10:00	29		14		
10:15	35		23		
10:30	31		26		
10:45	19	114	30	93	
11:00	36		16		
11:15	32		19		
11:30	39		17		
11:45	36	143	22	74	
Total	1104		1424		
Percent			100.0%	0.0%	0.0%
Day Total		2528			
Peak	11:00	-	01:45	-	-
Vol.	143	-	151	-	-
P.H.F.	0.917		0.899		

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



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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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INDUSTRIES, LLC

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

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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



Terminal E Departures Level Entrance  
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City, State: Boston, MA  
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154582 I Class Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Departures Level Entrance  
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154582 I Class Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

NB

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal E Departures Level Entrance  
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154582 ATR I Volume (Sat-Sun)  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	NB				Sat 15-Aug-15
	A.M.		P.M.		
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		
02:45	6	23	67	273	
03:00	5		53		
03:15	6		59		
03:30	9		55		
03:45	10	30	52	219	
04:00	7		54		
04:15	8		60		
04:30	10		46		
04:45	23	48	52	212	
05:00	17		53		
05:15	20		78		
05:30	29		57		
05:45	39	105	84	272	
06:00	37		96		
06:15	42		82		
06:30	37		96		
06:45	29	145	115	389	
07:00	26		106		
07:15	24		119		
07:30	28		114		
07:45	12	90	94	433	
08:00	16		89		
08:15	17		83		
08:30	18		72		
08:45	18	69	69	313	
09:00	21		47		
09:15	15		37		
09:30	18		35		
09:45	24	78	22	141	
10:00	15		25		
10:15	23		21		
10:30	27		20		
10:45	29	94	23	89	
11:00	31		32		
11:15	31		11		
11:30	39		15		
11:45	35	136	23	81	
Total	885		2754		
Percent			100.0%	0.0%	0.0%
Day Total		3639			
Peak	05:45	-	06:45	-	-
Vol.	155	-	454	-	-
P.H.F.	0.923		0.954		

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



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

Start Time	NB				Sun 16-Aug-15
	A.M.		P.M.		
12:00	19		44		
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		49		
02:15	4		67		
02:30	6		81		
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		100		
07:15	24		120		
07:30	38		96		
07:45	17	106	108	424	
08:00	20		80		
08:15	19		91		
08:30	22		77		
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		3793			
Peak	06:00	-	06:30	-	-
Vol.	137	-	445	-	-
P.H.F.	0.856		0.919		





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



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

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/15/15	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	7	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

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



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

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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



Terminal Area Roadway Departures Level  
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154582 J Class Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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Email: datarequests@pdillc.com

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

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Departures Level  
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154582 ATR J CLASS (Sat-Sun)  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Departures Level  
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154582 J Class Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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.		1	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

Terminal Area Roadway Departures Level  
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154582 ATR J CLASS (Sat-Sun)  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Departures Level  
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154582 ATR J CLASS (Sat-Sun)  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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



Terminal Area Roadway Departures Level  
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154582 J Class Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Departures Level  
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154582 J Class Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

WB Right Lane, WB Left Lane

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

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



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

Start Time	WB Right Lane		WB Left Lane		Combin ed		15-Aug- 15 Sat						
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.							
12:00	20	89	14	59	34	148							
12:15	30	80	9	67	39	147							
12:30	34	81	8	66	42	147							
12:45	6	69	6	65	12	134	576						
01:00	7	70	7	68	14	138							
01:15	10	74	9	54	19	128							
01:30	11	87	2	48	13	135							
01:45	11	94	6	57	17	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	128	12	87	24	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	111	79	85	155	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	115	167	78	293	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	92	169	51	341	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	58	151	32	326	90	480						
07:00	113	66	107	35	220	101							
07:15	65	61	55	19	120	80							
07:30	153	49	136	25	289	74							
07:45	124	63	128	45	124	108	363						
08:00	122	46	103	35	225	81							
08:15	117	61	108	29	225	90							
08:30	123	59	107	37	230	96							
08:45	141	38	104	28	129	66	333						
09:00	113	51	85	21	198	72							
09:15	98	37	74	19	172	56							
09:30	101	41	66	32	167	73							
09:45	107	41	70	10	82	51	252						
10:00	84	38	62	21	146	59							
10:15	84	40	45	20	129	60							
10:30	73	30	59	23	132	53							
10:45	78	23	49	19	83	42	214						
11:00	99	30	52	25	151	55							
11:15	88	18	60	19	148	37							
11:30	85	22	62	17	147	39							
11:45	84	28	70	13	154	41	172						
Total	4171	3391	3670	2269	7841	5660							
Percent	53.2%	59.9%	46.8%	40.1%									
Day Total		7562		5939		13501							
Peak	05:30	-	02:00	-	05:00	-	03:30	-	-	-	-		
Vol.	670	-	433	-	711	-	311	-	1332	-	719	-	-
P.H.F.	0.974		0.846		0.884		0.915		0.974		0.917		

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



PRECISION  
DATA  
INDUSTRIES, LLC

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

Start Time	WB Right Lane		WB Left Lane		Combin ed		16-Aug- 15 Sun
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	
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	109	407	10	38	86	362
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	137	527	9	50	97	383
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	155	606	17	39	111	445
03:00	21	139	21	130	42	269	
03:15	38	134	44	104	82	238	
03:30	49	161	46	127	95	288	
03:45	68	152	586	78	189	154	515
04:00	85	129	100	143	185	272	
04:15	113	159	114	148	227	307	
04:30	134	153	119	141	253	294	
04:45	132	150	591	174	507	111	543
05:00	168	131	143	133	311	264	
05:15	146	164	131	133	277	297	
05:30	162	164	107	128	269	292	
05:45	157	146	605	136	517	142	536
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	123	520	143	561	80	448
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	89	377	121	578	50	227
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	60	292	110	481	45	212
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	30	173	94	386	21	120
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	46	143	63	284	17	85
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	21	103	84	329	37	126
Total	4489	4930	3959	4002	8448	8932	
Percent	53.1%	55.2%	46.9%	44.8%			
Day Total		9419		7961		17380	
Peak	05:30	-	05:15	-	06:30	-	03:45
Vol.	637	-	622	-	611	-	586
P.H.F.	0.954		0.948		0.804		0.951
							0.908
							0.960

Terminal Area Roadway Departures Level  
west of Terminal E Entrance  
City, State: Boston, MA  
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154582 J Volume Redo  
Site Code: 13220.00  
Date Start: 24-Aug-15

Start Time	WB Right Lane		WB Left Lane		Combin ed		24-Aug- 15 Mon							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
12:00	23	86	8	90	31	176								
12:15	19	107	17	93	36	200								
12:30	15	103	18	100	33	203								
12:45	18	115	411	8	51	101	384	26	126	216	795			
01:00	10	102	9	90	19	192								
01:15	5	113	3	81	8	194								
01:30	3	114	3	92	6	206								
01:45	3	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	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	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	143	583	173	557	88	377	352	1057	231	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	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	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	60	275	119	612	41	193	285	1311	101	468			
08:00	126	64	105	35	231	99								
08:15	123	43	109	29	232	72								
08:30	116	46	94	34	210	80								
08:45	142	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	102	18	234	48								
09:45	130	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	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	26	98	87	353	35	119	189	796	61	217			
Total	4849	4297	4295	3286	9144	7583								
Percent	53.0%	56.7%	47.0%	43.3%										
Day Total		9146		7581		16727								
Peak	05:30	-	03:30	-	04:30	-	02:45	-	06:15	-	02:45	-	-	-
Vol.	755	-	595	-	720	-	460	-	1450	-	1036	-	-	-
P.H.F.	0.930		0.891		0.882		0.950		0.969		0.949			

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



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

Start Time	WB Right Lane		WB Left Lane		Combin ed		25-Aug- 15 Tue							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.						
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	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	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	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	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	512	166	542	87	402	322	980	195	914			
05:00	149	125		156		96		305		221				
05:15	143	111		145		89		288		200				
05:30	176	123		152		93		328		216				
05:45	178	646	477	182	635	71	349	360	1281	189	826			
06:00	195	119		161		76		356		195				
06:15	157	98		187		69		344		167				
06:30	139	98		141		75		280		173				
06:45	174	665	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	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	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	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	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	119	81	311	48	161	181	697	79	280			
Total	4229	4117		4117		3132		8346		7249				
Percent	50.7%	56.8%		49.3%		43.2%								
Day Total		8346		7249		15595								
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			

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



PRECISION  
 D A T A  
 INDUSTRIES, LLC

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

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
City, State: Boston, MA  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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	0	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	0	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



Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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	0	0	341	8	9	0	0	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

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



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

WB Right Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

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



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INDUSTRIES, LLC

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

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

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/16/15	0	0	569	11	5	1	0	586
01:00	0	0	360	5	4	0	0	369
02:00	0	0	129	1	3	1	0	134
03:00	0	0	42	0	3	0	0	45
04:00	0	0	53	2	5	0	0	60
05:00	0	0	130	1	9	2	0	142
06:00	0	0	235	5	11	6	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

Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
City, State: Boston, MA  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
City, State: Boston, MA  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated Trucks	Total
08/18/15	0	0	308	3	6	2	0	319
01:00	0	0	212	1	7	3	0	223
02:00	0	0	145	6	2	0	0	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
Vol.		1	685	25	22	5	3	713

Terminal Area Roadway Arrival Level  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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
Percent	0.0%	0.0%	94.4%	2.5%	2.8%	0.2%	0.1%	0.0%
AM Peak			00:00	10:00	05:00	04:00	09:00	00:00
Vol.			807	16	24	5	1	814
PM Peak		13:00	22:00	16:00	13:00	17:00	17:00	17:00
Vol.		1	928	36	30	5	9	973

Terminal Area Roadway Arrival Level  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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



Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
City, State: Boston, MA  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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
Vol.		1	1274	27	25	6	5	1300
PM Peak			18:00	15:00	17:00	17:00	14:00	18:00
Vol.			947	42	30	25	3	993

Terminal Area Roadway Arrival Level  
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154582 ATR L Class  
Site Code: 13220.00  
Date Start: 15-Aug-15

WB Right Lane, WB Left Lane

Start Time	Bicycles	Motorcycles	Cars	Light Trucks	Buses	Single Unit Heavy	Articulated 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

Terminal Area Roadway Arrival Level  
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154582 ATR L Volume  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	WB Right Lane		WB Left Lane		Combin ed		15-Aug- 15 Sat							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
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	199	167	814	98	464			
01:00	81	61	73	52	154	113								
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	62	41	76	70	138								
02:15	52	99	52	92	104	191								
02:30	42	68	43	58	85	126								
02:45	22	145	50	279	36	172	68	294	58	317	118	573		
03:00	14	67	32	75	46	142								
03:15	14	66	14	79	28	145								
03:30	10	80	11	71	21	151								
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	49	196								
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								
10:45	78	378	100	497	58	238	103	461	136	616	203	958		
11:00	81	64	48	150	129	214								
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	4063	2171	4094	5137	8157								
Percent	57.7%	49.8%	42.3%	50.2%										
Day Total		7029		6265		13294								
Peak	12:00	-	09:45	-	12:00	-	05:15	-	12:00	-	05:15	-	-	-
Vol.	466	-	517	-	348	-	525	-	814	-	996	-	-	-
P.H.F.	0.798		0.834		0.837		0.852		0.873		0.836			

Terminal Area Roadway Arrival Level  
west of Terminal E Arrival Level Entrance  
City, State: Boston, MA  
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154582 ATR L Volume  
Site Code: 13220.00  
Date Start: 15-Aug-15

Start Time	WB Right Lane		WB Left Lane		Combin ed		16-Aug- 15 Sun						
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.							
12:00	70	52	173	70	243	122							
12:15	78	106	130	106	208	212							
12:30	115	120	131	106	246	226							
12:45	125	388	80	358	152	586	74	356	277	974	154	714	
01:00	130	57	121	54	251	111							
01:15	105	72	100	55	205	127							
01:30	127	66	96	81	223	147							
01:45	64	426	110	305	52	369	94	284	116	795	204	589	
02:00	20	112	11	76	31	188							
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							
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	102	15	67	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							
05:45	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							
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	
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							
11:45	69	372	135	462	54	266	108	464	123	638	243	926	
Total	3065	5807	2731	5519	5796	11326							
Percent	52.9%	51.3%	47.1%	48.7%									
Day Total		8872		8250		17122							
Peak	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



PRECISION  
DATA  
INDUSTRIES, LLC

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 Time	WB Right Lane		WB Left Lane		Combin ed		17-Aug- 15 Mon							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
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	85	116	76	201	161								
01:15	78	84	121	91	199	175								
01:30	42	131	27	78	69	209								
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	106	18	100	31	206								
04:15	14	118	21	122	35	240								
04:30	32	130	47	111	79	241								
04:45	51	110	146	500	59	145	122	455	110	255	268	955		
05:00	53	146	55	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	55	162	91	351								
07:15	58	159	50	112	108	271								
07:30	72	119	74	61	146	180								
07:45	127	293	70	537	127	306	55	390	254	599	125	927		
08:00	93	84	144	71	237	155								
08:15	82	112	74	82	156	194								
08:30	106	121	92	116	198	237								
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	166	131	145	254	311								
11:15	98	130	71	105	169	235								
11:30	95	100	53	93	148	193								
11:45	81	397	105	501	78	333	92	435	159	730	197	936		
Total	3514	5506	3555	4903	7069	10409								
Percent	49.7%	52.9%	50.3%	47.1%										
Day Total		9020		8458		17478								
Peak	12:00	-	06:30	-	12:00	-	06:15	-	12:00	-	06:30	-	-	-
Vol.	699	-	612	-	601	-	544	-	1300	-	1147	-	-	-
P.H.F.	0.901		0.810		0.894		0.840		0.931		0.817			

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



PRECISION  
 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 L Volume  
 Site Code: 13220.00  
 Date Start: 15-Aug-15

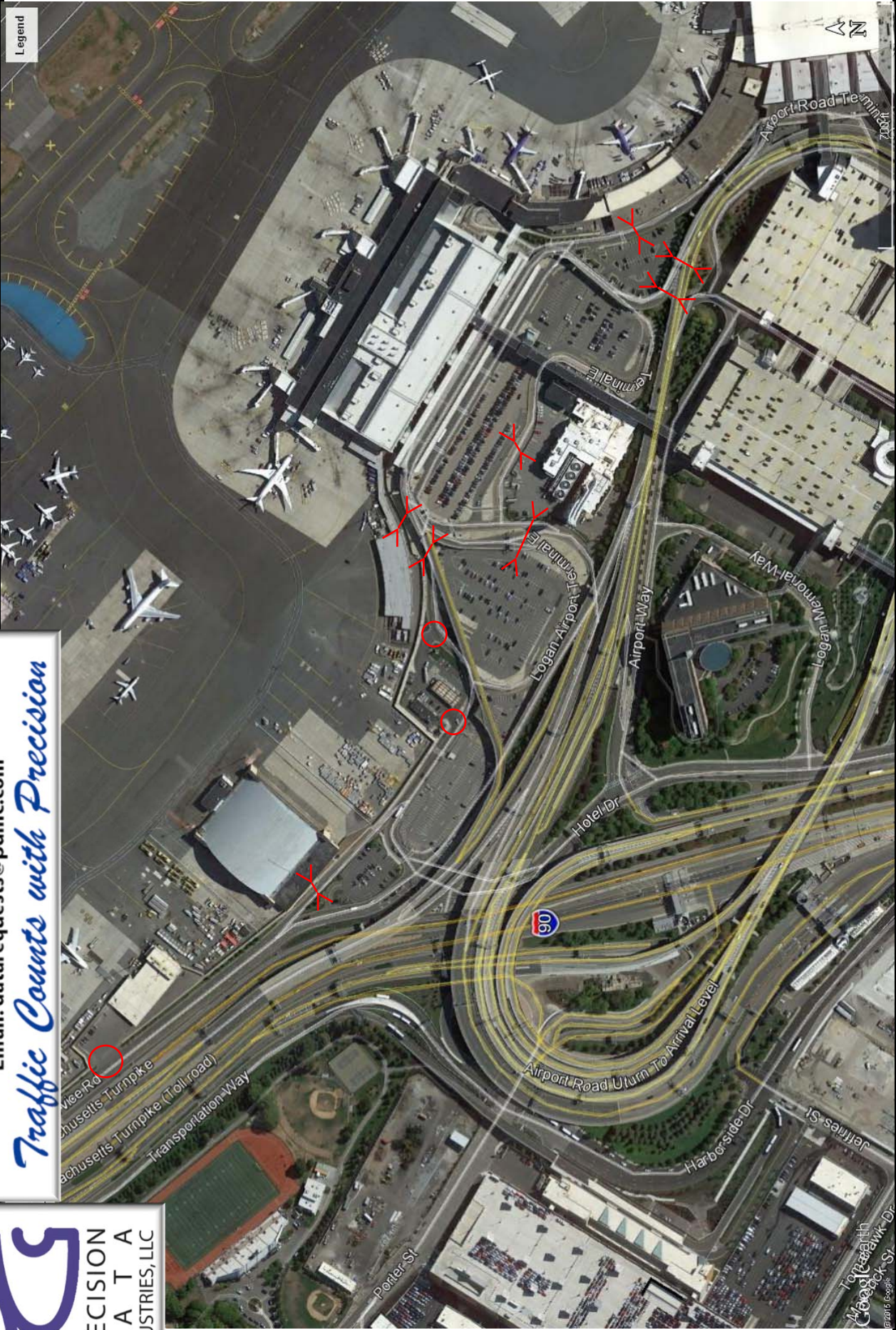
Start Time	WB Right Lane		WB Left Lane		Combin ed		18-Aug- 15 Tue							
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.								
12:00	128	59	108	82	236	141								
12:15	86	74	63	80	149	154								
12:30	60	71	78	75	138	146								
12:45	104	88	292	70	319	116	353	174	697	204	645			
01:00	66	68	81	84	147	152								
01:15	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	135	40	112	76	247								
02:15	30	129	48	91	78	220								
02:30	20	116	21	108	41	224								
02:45	44	130	99	479	44	153	71	382	88	283	170	861		
03:00	29	82	39	121	68	203								
03:15	20	87	43	88	63	175								
03:30	10	38	15	73	25	111								
03:45	7	66	51	258	10	107	73	355	17	173	124	613		
04:00	13	40	8	51	21	91								
04:15	23	55	11	69	34	124								
04:30	25	81	28	113	53	194								
04:45	32	93	102	278	38	85	110	343	70	178	212	621		
05:00	30	98	45	107	75	205								
05:15	48	121	42	151	90	272								
05:30	57	107	47	115	104	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	98	71	81	123	179								
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		8193		8474		16667								
Peak	10:30	-	09:00	-	10:30	-	08:45	-	10:30	-	08:45	-	-	-
Vol.	438	-	694	-	361	-	762	-	799	-	1442	-	-	-
P.H.F.	0.883		0.894		0.894		0.925		0.896		0.901			



PRECISION DATA INDUSTRIES, LLC  
 Office: 508.481.3999 Fax: 508.545.1234  
 Email: [datarequests@pdillc.com](mailto:datarequests@pdillc.com)

*Traffic Counts with Precision*

Legend



Client:  
VHB

Engineer:  
A. Costa

Site Code:  
13220.00

Date:  
Sat 8/15 thru Tues 8/18/15

PDI Job Number:  
154582

City, State:  
Boston, MA

Topograph  
Cross-Section  
© 2015 Google Earth

# Curbside Operations Analysis

- Existing Conditions



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# 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: Vhant on 2/4/2016

Scenario	Terminal E
Level / type of roadway	2015 Existing, Curb 1
Total lanes / approach lanes	4 / 2
Number of curbside zones	11
% of 1st lane full when next vehicle double parks	80%
% of 2nd lane full when next vehicle triple parks	50%
Crosswalk adjustment factor	100%
Regional adjustment factor	95%

Vehicle class	Vehicle 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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	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	Zone 11
Name	CW1	AS	CW2	RC&BL	CW3	SL	CW4	LE	CW5	SchBus	CharterBus
Type	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active
Curbside frontage (feet)	20	115	20	115	20	115	20	115	20	75	50
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
Volume of vehicles using roadway (vph)	15	15	15	15	15	15	15	15	15	15	15
Private Vehicle Pick-Up	130	130	130	130	130	130	130	130	130	130	130
Taxicabs	6	6	6	6	6	6	6	6	6	6	6
Economy Parking	6	6	6	6	6	6	6	6	6	6	6
MPA Employee	5	5	5	5	5	5	5	5	5	5	5
Water Taxi & Water Ferry	6	6	6	6	6	6	6	6	6	6	6
Interterminal	15	15	15	15	15	15	15	15	15	15	15
Rental Car and MBTA BL	50	50	50	50	50	50	50	50	50	50	50
Car Service	23	23	23	23	23	23	23	23	23	23	23
Other Shared Ride or Limo	-	-	-	-	-	-	-	-	-	-	-
Free Hotel or Other CS	6	6	6	6	6	6	6	6	6	6	6
MBTA Silver Line	7	7	7	7	7	7	7	7	7	7	7
Logan Express	3	3	3	3	3	3	3	3	3	3	3
Scheduled Bus Service	3	3	3	3	3	3	3	3	3	3	3
Charter Bus	-	-	-	-	-	-	-	-	-	-	-
Volume of vehicles using curbside (vph)	-	-	-	-	-	-	-	-	-	-	-
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-	-	-
Taxicabs	-	-	-	-	-	-	-	-	-	-	-
Economy Parking	-	6	-	-	-	-	-	-	-	-	-
MPA Employee	-	6	-	-	-	-	-	-	-	-	-
Water Taxi & Water Ferry	-	5	-	-	-	-	-	-	-	-	-
Interterminal	-	6	-	-	-	-	-	-	-	-	-
Rental Car and MBTA BL	-	-	-	15	-	-	-	-	-	-	-
Car Service	-	-	-	-	-	-	-	-	-	-	-
Other Shared Ride or Limo	-	-	-	-	-	-	-	-	-	-	-
Free Hotel or Other CS	-	-	-	-	-	-	-	-	-	-	-
MBTA Silver Line	-	-	-	-	-	6	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	7	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	-	3	3

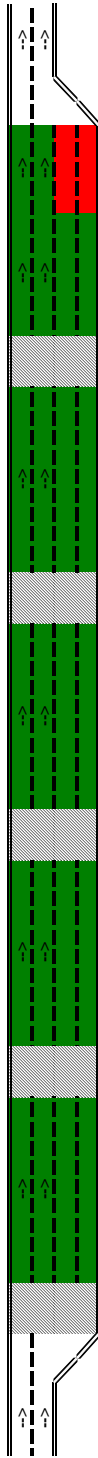
# Quick Analysis Tool for Airport Roadways

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

## Results: Level-of-Service by Zone

Model run by: Vhant on 2/4/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2015 Existing, Curb 1  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 11



Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11
Name/description	CW1	AS	CW2	RC&BL	CW3	SL	CW4	LE	CW5	SchBus	CharterBus
Curb length (feet)	20	115	20	115	20	115	20	115	20	75	50
Curb type	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active
Roadway volume (vph)	275	275	275	275	275	275	275	275	275	275	275
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
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
Roadway LOS	A	A	A	A	A	A	A	A	A	A	A
Curb demand (# in sys 95% of time)	N/A	2.0	N/A	1.0	N/A	1.0	N/A	1.0	N/A	1.0	2.0
Curb capacity per lane (vehicles)	N/A	3.0	N/A	2.0	N/A	2.0	N/A	2.0	N/A	2.0	1.0
Curb utilization ratio	N/A	0.667	N/A	0.500	N/A	0.500	N/A	0.500	N/A	0.500	2.000
Curb LOS	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A	E

### 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

ID	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	LE	CW5	SchBus	CharterBus
Type of zone	active	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active
Curbside length (feet)	20	115	20	115	20	115	20	115	20	75	50
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	-	6	-	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	-	50.00	-	50.00	50.00
Average vehicle arrival rate (vph)	-	23.00	-	15.00	-	6.00	-	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	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
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	A	A	A	A	A	A	A	A	A	A	E
Roadway LOS	A	A	A	A	A	A	A	A	A	A	A

# 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: Vhant on 2/4/2016

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

Vehicle class	Vehicle 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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	7

### Assumptions by zone

Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Name	Pax PU active	CW1 xwalk	Pax PU active	CW2 xwalk	Pax PU active	CW3 xwalk	Pax PU active	CW4 xwalk	Courtesybus active
Type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Curbside frontage (feet)	190	20	115	20	115	20	115	20	50
Number of lanes	3	3	3	3	3	3	3	3	3
Number of approach lanes	2	2	2	2	2	2	2	2	2
Volume of vehicles using roadway (vph)	580	580	580	580	580	580	580	580	580
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-
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	20	20	20	20	20	20	20	20	20
MBTA Silver Line	-	-	-	-	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	-
Volume of vehicles using curbside (vph)	83	-	51	-	51	-	51	-	-
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	20
MBTA Silver Line	-	-	-	-	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	-

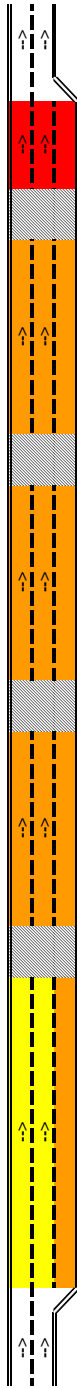
# Quick Analysis Tool for Airport Roadways

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

## Results: Level-of-Service by Zone

Model run by: Vhant on 2/4/2016

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



Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Name/description	Pax PU	CW1	Pax PU	CW2	Pax PU	CW3	Pax PU	CW4	Courtesy/B
Curb length (feet)	190	20	115	20	115	20	115	20	50
Zone type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Roadway volume (vph)	600	600	600	600	600	600	600	600	600
Roadway capacity (vph)	1,373	2,657	974	2,657	974	2,657	974	2,657	722
Roadway V/C ratio	0.437	0.226	0.616	0.226	0.616	0.226	0.616	0.226	0.832
Roadway LOS	C	A	D	A	D	A	D	A	E
Curb demand (# in sys 95% of time)	11.0	N/A	8.0	N/A	8.0	N/A	8.0	N/A	2.0
Curb capacity per lane (vehicles)	8.0	N/A	5.0	N/A	5.0	N/A	5.0	N/A	1.0
Curb utilization ratio	1.375	N/A	1.600	N/A	1.600	N/A	1.600	N/A	2.000
Curb LOS	D	N/A	D	N/A	D	N/A	D	N/A	E

### 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

ID	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	CW4	CourtesyBus
Type of zone	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Curbside length (feet)	190	20	115	20	115	20	115	20	50
Number of lanes	3	3	3	3	3	3	3	3	3
Number of approach lanes	2	2	2	2	2	2	2	2	2
Roadway volume (vph)	600	600	600	600	600	600	600	600	600
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%	100.0%
Regional adjustment factor	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Through lane roadway capacity	1,446	2,797	1,026	2,797	1,026	2,797	1,026	2,797	760
Adjusted through lane roadway capacity	1,373	2,657	974	2,657	974	2,657	974	2,657	722
Estimated roadway V/C ratio	0.437	0.226	0.616	0.226	0.616	0.226	0.616	0.226	0.832
Curb capacity per lane (vehicles)	8.00	-	5.00	-	5.00	-	5.00	-	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	-	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	-	5.00	-	5.00	-	5.00	-	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	D	A	D	A	D	A	D	A	E
Roadway LOS	C	A	D	A	D	A	D	A	E

# 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: Vhnton on 2/4/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2015 Existing  
 Level / Type of roadway Departures  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 1  
 % of 1st lane full when next vehicle double parks 80%  
 % of 2nd lane full when next vehicle triple parks 50%  
 Crosswalk adjustment factor 100%  
 Regional adjustment factor 95%

### 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
Taxis	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	0.9
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	70	1
Logan Express	50	1
Scheduled Bus Service	50	2
Charter Bus	50	2

### Assumptions by zone

Zone ID	Zone Name
1	ALL
active	active
635	635
4	4
2	2

### Volume of vehicles using roadway (vph)

Private Vehicle Drop-Off	259
Rental Car Drop-Off	-
Taxis	42
Economy Parking	-
MPA Employee	-
Water Taxi & Water Ferry	-
Interterminal	-
Rental Car and MBTA BL	20
Car Service	58
Other Shared Ride or Limo	18
Free Hotel or Other CS	20
MBTA Silver Line	-
Logan Express	7
Scheduled Bus Service	8
Charter Bus	3

### Volume of vehicles using curbside (vph)

Private Vehicle Drop-Off	259
Rental Car Drop-Off	-
Taxis	42
Economy Parking	-
MPA Employee	-
Water Taxi & Water Ferry	-
Interterminal	-
Rental Car and MBTA BL	20
Car Service	58
Other Shared Ride or Limo	18
Free Hotel or Other CS	20
MBTA Silver Line	-
Logan Express	7
Scheduled Bus Service	8
Charter Bus	3



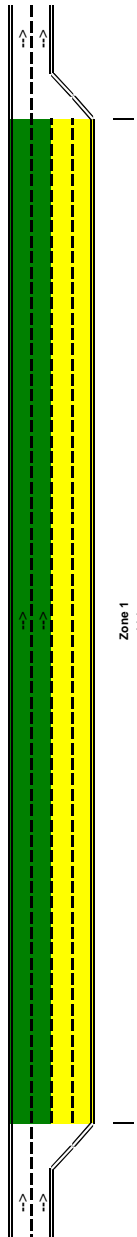
# Quick Analysis Tool for Airport Roadways

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

## Results: Level-of-Service by Zone

Model run by: Vhunt on 2/14/2016

Airport: BOS  
 Roadway location: Terminal E  
 Scenario: 2015 Existing  
 Level / type of roadway: Departures  
 Total lanes / approach lanes: 4 / 2  
 Number of curbside zones: 1



Zone ID	Zone 1
Name/description	ALL
Curb length (feet)	635
Zone type	active
Roadway volume (vph)	435
Roadway capacity (vph)	2,549
Roadway V/C ratio	0.171
Roadway LOS	A
Curb demand (# in sys 95% of time)	27.0
Curb capacity per lane (vehicles)	21.0
Curb utilization ratio	1.286
Curb LOS	C

### 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

ID	Name	Zone 1
	Type of zone	ALL
	Curbside length (feet)	active
	Number of lanes	635
	Roadway volume (vph)	4
	Curbside demand (vph)	2
	Average vehicle length (feet)	435
	Average vehicle arrival rate (vph)	435
	Crosswalk adjustment factor	2.72
	Regional adjustment factor	29.67
	Through lane roadway capacity	435.00
	Adjusted through lane roadway capacity	100.0%
	Estimated roadway V/C ratio	95.0%
	Curb capacity per lane (vehicles)	2.685
	% occupancy in lane 1	2.549
	% occupancy in lane 2	0.171
	% occupancy in lane 3	21.00
	# of cars in curbside lane	1.286
	# of double-parked cars	1.000
	# of triple-parked cars	0.280
	Curbside LOS	-
	Roadway LOS	21.00
		5.88
		-
		C
		A

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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
$V_{12}$	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

D	5
$V_{12}$	#DIV/0!
$V_R$	#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!
$V_R$	#DIV/0!
$V_F$	410
$f_{hvR}$	1.00
$f_{hvF}$	0.92
$f_p$	0.85 From HCM 2010 Text/Table, unfamiliar drivers
$PHF_R$	#DIV/0!
$PHF_F$	0.90

Knowns:

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
$V_{12}$	1485
$V_R$	614
$V_F$	1485
$f_{hvR}$	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
$V_R$	460	$V_F$	1150
$V_{existing}$	483	$V_{existing}$	1215
$V_{p15}$	133	$V_{p15}$	330
$L_D$	330		
$P_{FD}$	1	From Table 13-7 HCM 2010	

## Weave Calc\_6

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

Knowns:

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	

## Weave Calc\_9

### Departure Leve Between Terminal C and E

Scenario: Existing

D	16
$V_t$	1408
$V_{FF}$	440
$V_{FR}$	538
$V_{RF}$	356
$V_{RR}$	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

### Knowns:

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

## Weave Calc\_10

### Departure Leve Between Terminal C and E

Scenario: Existing

D	31
$V_t$	2016
$V_{FF}$	859
$V_{FR}$	547
$V_{RF}$	581
$V_{RR}$	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

### Knowns:

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

Merge\_11

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:

HV%	0.02	HV%	0.09
$E_T$	1.5	$E_T$	1.5
$V_R$	338	$V_F$	614
$V_{existing}$	110	$V_{existing}$	620
$V_{p15}$	36	$V_{p15}$	164
$L_A$	165		
$P_{FD}$	1	From Table 13-7 HCM 2010	

Merge\_12

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

Merge\_13

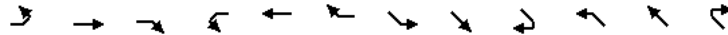
Departure Exit Ramp to TWT Exit Ramp

Scenario: Existing

D	30
$V_{12}$	2316
$V_R$	1076
$V_F$	2316
$f_{hvR}$	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	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
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
Fit 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 Utilization	36.9%
ICU Level of Service	A
Analysis Period (min)	15



Intersection															
Int Delay, s/veh	3.2														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR			
Vol, veh/h	0	0	0	0	85	75	0	0	0	565	210	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	137	121	0	0	0	621	231	0			
Major/Minor	Minor2						Major2								
Conflicting Flow All	1473						1473						0	0	0
Stage 1	1473						1473						-	-	-
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	76			-93			675			-			-	-	-
Stage 1	115			140			-			-			-	-	-
Stage 2	-			-			-			-			-	-	-
Platoon blocked, %	-														
Mov Cap-1 Maneuver	76			0			675			-			-	-	-
Mov Cap-2 Maneuver	76			0			-			-			-	-	-
Stage 1	115			0			-			-			-	-	-
Stage 2	-			0			-			-			-	-	-
Approach	WB						NW								
HCM Control Delay, s	13.6						-								
HCM LOS	B						-								
Minor Lane/Major Mvmt	NWL	NWT	NWR	WBLn1											
Capacity (veh/h)	-	-	-	675											
HCM Lane V/C Ratio	-	-	-	0.382											
HCM Control Delay (s)	-	-	-	13.6											
HCM Lane LOS	-	-	-	B											
HCM 95th %tile Q(veh)	-	-	-	1.8											

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

# Intersection Capacity Analyses

- Existing Conditions

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Terminal E Modernization DEIR  
5: Jeffries Street/Ramp S-T & Transportation Way

2015 Existing Conditions  
Timing Plan: AM Peak




















Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↖	↗↗	↖↖		↖	↗↗		↖
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	A	B		C	C		D
Approach Delay (s)		15.7	13.5			25.2		
Approach LOS		B	B			C		

Intersection Summary

HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	38.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Terminal E Modernization DEIR  
12: Frankfort Street & Lovell Road

2015 Existing Conditions  
Timing Plan: AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			0.03		0.16				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		C			C		A	A			A	
Approach Delay (s)		28.9			27.4			4.4			6.8	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	39.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑↑	
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	C	C	C	B	B			C	
Approach Delay (s)	34.3		33.1					33.1	
Approach LOS	C		C					C	

Intersection Summary			
HCM 2000 Control Delay	26.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.23		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	32.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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	A			B						C	C
Approach Delay (s)		16.4			16.7			0.0			28.4	
Approach LOS		B			B			A			C	

**Intersection Summary**

HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
25: Hotel Drive & SR-2/Ramp D-S

2015 Existing Conditions  
Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↗		↖	↗			↗	
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	C		B	B	B		A	A			B	
Approach Delay (s)		20.9			16.1			9.0			18.6	
Approach LOS		C			B			A			B	

Intersection Summary

HCM 2000 Control Delay	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	22.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Terminal E Modernization DEIR  
27: Hotel Drive & TWT Off-Ramp/Airport Way

2015 Existing Conditions  
Timing Plan: AM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕			↕	
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		B	B	C		B		B			B	
Approach Delay (s)		16.8			20.8			13.2			15.4	
Approach LOS		B			C			B			B	

Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	52.8	Sum of lost time (s)	14.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
33: SR-2/Frankfort Street & Route 1A NB Off-Ramp

2015 Existing Conditions  
Timing Plan: AM Peak



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	C			A	A	
Approach Delay (s)	28.8			4.4	2.9	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.22		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	24.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	<del>TT</del>			<del>TT</del>	<del>TT</del>	
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	A			A	A	
Approach Delay (s)	4.3			4.4	4.3	
Approach LOS	A			A	A	

**Intersection Summary**

HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.10		
Actuated Cycle Length (s)	13.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	25.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
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	B		A
Approach Delay (s)	12.4	0.0	1.3
Approach LOS	B		

Intersection Summary			
Average Delay		2.5	
Intersection Capacity Utilization		40.4%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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	B			
Approach Delay (s)	10.8	0.0	0.0	
Approach LOS	B			

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization		25.2%	ICU Level of Service A
Analysis Period (min)		15	

Terminal E Modernization DEIR  
 5: Jeffries Street/Ramp S-T & Transportation Way

2015 Existing Conditions  
 Timing Plan: PM Peak



Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↘	↑↑	↑↑		↘	↑↑		↘
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	B	C		F	B		D
Approach Delay (s)		18.8	26.3			42.9		
Approach LOS		B	C			D		

Intersection Summary			
HCM 2000 Control Delay	34.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Terminal E Modernization DEIR  
12: Frankfort Street & Lovell Road

2015 Existing Conditions  
Timing Plan: PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		C			C		A	A			A	
Approach Delay (s)		34.3			34.2			5.8			4.8	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	12.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	40.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑↑	
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	C	D	C	C	D			C	
Approach Delay (s)	34.1		28.4					29.9	
Approach LOS	C		C					C	

**Intersection Summary**

HCM 2000 Control Delay	32.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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	E	B			C						D	B
Approach Delay (s)		28.1			22.0			0.0			29.5	
Approach LOS		C			C			A			C	

#### Intersection Summary

HCM 2000 Control Delay	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
25: Hotel Drive & SR-2/Ramp D-S

2015 Existing Conditions  
Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	1	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	C		B	B	B		B	B			D	
Approach Delay (s)		19.0			19.0			12.3			37.7	
Approach LOS		B			B			B			D	

Intersection Summary

HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	71.7	Sum of lost time (s)	22.0
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
27: Hotel Drive & TWT Off-Ramp/Airport Way

2015 Existing Conditions  
Timing Plan: PM Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕↔			↕↕	
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		C	C	C		C		B			B	
Approach Delay (s)		26.3			25.5			14.5			18.4	
Approach LOS		C			C			B			B	

Intersection Summary

HCM 2000 Control Delay	21.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	66.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	59.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
33: SR-2/Frankfort Street & Route 1A NB Off-Ramp

2015 Existing Conditions  
Timing Plan: PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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						
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	C			A	A	
Approach Delay (s)	33.3			9.7	7.3	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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	A			A	A	
Approach Delay (s)	5.3			3.9	3.8	
Approach LOS	A			A	A	

Intersection Summary				
HCM 2000 Control Delay		4.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio		0.12		
Actuated Cycle Length (s)		14.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization		26.2%	ICU Level of Service	A
Analysis Period (min)		15		
c Critical Lane Group				



Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
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	0.8
Lane LOS	B		A
Approach Delay (s)	14.1	0.0	0.8
Approach LOS	B		

Intersection Summary			
Average Delay		2.2	
Intersection Capacity Utilization		36.4%	ICU Level of Service A
Analysis Period (min)		15	



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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	B		A	
Approach Delay (s)	12.8	0.0	0.3	
Approach LOS	B			

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization		34.7%	ICU Level of Service
Analysis Period (min)		15	A

Terminal E Modernization DEIR  
5: Jeffries Street/Ramp S-T & Transportation Way

2015 Existing Conditions  
Timing Plan: Sunday Peak



Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↖	↗↗	↖↗		↖	↗↗		↖
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								
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	B	C		D	B		D
Approach Delay (s)		17.3	21.5			24.3		
Approach LOS		B	C			C		

Intersection Summary

HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	52.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Terminal E Modernization DEIR  
12: Frankfort Street & Lovell Road

2015 Existing Conditions  
Timing Plan: Sunday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
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		C			C		A	A			A	
Approach Delay (s)		30.9			33.0			4.8			6.5	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization	47.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↑	↔	↖↗	↖			↖↗	
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		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		0.00	c0.14	0.12			c0.07	
v/s Ratio Perm		c0.14							
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	C	C			D	
Approach Delay (s)	30.8		26.6					35.9	
Approach LOS	C		C					D	

Intersection Summary			
HCM 2000 Control Delay	29.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	19.0
Intersection Capacity Utilization	43.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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						0.8	0.1
Delay (s)	54.3	9.4			16.7						35.5	23.0
Level of Service	D	A			B						D	C
Approach Delay (s)		27.6			16.7			0.0			29.8	
Approach LOS		C			B			A			C	

**Intersection Summary**

HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	31.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
25: Hotel Drive & SR-2/Ramp D-S

2015 Existing Conditions  
Timing Plan: Sunday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↗		↖	↗			↗	
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	C		B	B	B		A	A			B	
Approach Delay (s)		16.7			15.2			7.8			16.9	
Approach LOS		B			B			A			B	

Intersection Summary

HCM 2000 Control Delay	13.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	55.2	Sum of lost time (s)	22.0
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
27: Hotel Drive & TWT Off-Ramp/Airport Way

2015 Existing Conditions  
Timing Plan: Sunday Peak



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗	↖		↗		↕			↕	
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		B	B	B		B		B			B	
Approach Delay (s)		15.3			19.3			11.5			12.7	
Approach LOS		B			B			B			B	

Intersection Summary

HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	14.0
Intersection Capacity Utilization	46.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Terminal E Modernization DEIR  
33: SR-2/Frankfort Street & Route 1A NB Off-Ramp

2015 Existing Conditions  
Timing Plan: Sunday Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	124	22	0	195	195	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)	135	24	0	212	212	0
RTOR Reduction (vph)	10	0	0	0	0	0
Lane Group Flow (vph)	149	0	0	212	212	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)	11.6			52.2	52.2	
Effective Green, g (s)	12.6			53.2	53.2	
Actuated g/C Ratio	0.16			0.67	0.67	
Clearance Time (s)	5.0			5.0	5.0	
Vehicle Extension (s)	2.0			2.0	2.0	
Lane Grp Cap (vph)	271			1098	1070	
v/s Ratio Prot	c0.09			0.13	c0.13	
v/s Ratio Perm						
v/c Ratio	0.55			0.19	0.20	
Uniform Delay, d1	31.1			5.2	5.2	
Progression Factor	1.00			1.00	0.68	
Incremental Delay, d2	1.2			0.4	0.4	
Delay (s)	32.3			5.5	3.9	
Level of Service	C			A	A	
Approach Delay (s)	32.3			5.5	3.9	
Approach LOS	C			A	A	

Intersection Summary

HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	25.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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	A			A	A	
Approach Delay (s)	5.1			3.9	3.9	
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		0.06		
Actuated Cycle Length (s)		14.8	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			



Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
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	1
Control Delay (s)	13.0	0.0	0.7
Lane LOS	B		A
Approach Delay (s)	13.0	0.0	0.7
Approach LOS	B		

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization		34.6%	ICU Level of Service A
Analysis Period (min)		15	





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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	B		A	
Approach Delay (s)	10.4	0.0	0.4	
Approach LOS	B			

Intersection Summary			
Average Delay		2.7	
Intersection Capacity Utilization		23.2%	ICU Level of Service
Analysis Period (min)		15	A

# 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  $\frac{3}{4}$  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.<sup>1</sup> 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.<sup>2</sup>

#### *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

<sup>1</sup> 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%.

<sup>2</sup> *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 14<sup>th</sup> 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.<sup>3</sup>
- ❑ 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.<sup>4</sup>
- ❑ 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.<sup>5</sup>
- ❑ 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.<sup>6</sup>

<sup>3</sup> Per schedules effective May 31, 2015.

<sup>4</sup> Per schedule effective May 2015.

<sup>5</sup> Per schedule effective March 22, 2015.

<sup>6</sup> 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: Vhunto on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 No-Build, Curb 1  
 Level / Type of roadway 4 / 2  
 Total lanes / approach lanes 10  
 Number of curbside zones 80%  
 % of 1st lane full when next vehicle double parks 50%  
 % of 2nd lane full when next vehicle triple parks 100%  
 Crosswalk adjustment factor 95%  
 Regional adjustment factor

Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxis	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	40.0	5.0
Free Hotel or Other CS	40.0	1.5
MBTA Silver Line	70.0	0.8
Logan Express	50	2
Scheduled Bus Service	50	3
Charter Bus	50	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	SL	CW3	LE	CW4	SchBus	CharterBus
Type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active
Curbside frontage (feet)	115	20	115	20	115	20	115	20	70	70
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
Taxis	220	220	220	220	220	220	220	220	220	220
Economy Parking	6	6	6	6	6	6	6	6	6	6
MPA Employee	6	6	6	6	6	6	6	6	6	6
Water Taxi & Water Ferry	5	5	5	5	5	5	5	5	5	5
Interterminal	6	6	6	6	6	6	6	6	6	6
Rental Car and MBTA BL	15	15	15	15	15	15	15	15	15	15
Car Service	117	117	117	117	117	117	117	117	117	117
Other Shared Ride or Limo	23	23	23	23	23	23	23	23	23	23
Free Hotel or Other CS	-	-	-	-	-	-	-	-	-	-
MBTA Silver Line	6	6	6	6	6	6	6	6	6	6
Logan Express	7	7	7	7	7	7	7	7	7	7
Scheduled Bus Service	3	3	3	3	3	3	3	3	3	3
Charter Bus	3	3	3	3	3	3	3	3	3	3

### Volume of vehicles using curbside (vph)

Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-	-
Taxis	-	-	-	-	-	-	-	-	-	-
Economy Parking	6	6	6	6	6	6	6	6	6	6
MPA Employee	6	6	6	6	6	6	6	6	6	6
Water Taxi & Water Ferry	5	5	5	5	5	5	5	5	5	5
Interterminal	6	6	6	6	6	6	6	6	6	6
Rental Car and MBTA BL	-	-	15	-	-	-	-	-	-	-
Car Service	-	-	-	-	-	-	-	-	-	-
Other Shared Ride or Limo	-	-	-	-	-	-	-	-	-	-
Free Hotel or Other CS	-	-	-	-	-	-	-	-	-	-
MBTA Silver Line	-	-	-	-	6	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	-	3

# No Build/No Action (existing parking freeze remains)

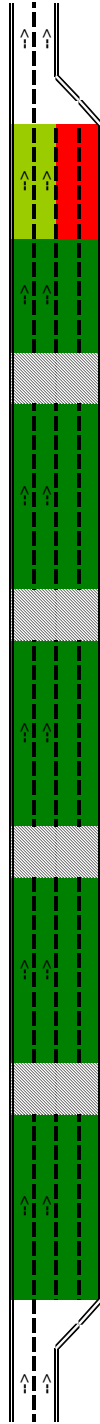
## Quick Analysis Tool for Airport Roadways

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

### Results: Level-of-Service by Zone

Model run by: Vhant on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 No-Build, Curb 1  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 10



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

### Level-of-service (LOS) key:



# 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.

### Results: Detailed Report By Zone

Model run by: Vhunt on 3/15/2016

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	SL	CW3	LE	CW4	SchBus	CharterBus
Type of zone	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	active
Curbside length (feet)	115	20	115	20	115	20	115	20	70	70
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
Roadway volume (vph)	432	432	432	432	432	432	432	432	432	432
Curbside demand (vph)	23	-	15	-	6	-	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	-	50.00	-	50.00	50.00
Average vehicle arrival rate (vph)	23.00	-	15.00	-	6.00	-	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%
Regional adjustment factor	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Through lane roadway capacity	2,865	2,850	2,854	2,850	2,854	2,850	2,854	2,850	2,825	1,786
Adjusted through lane roadway capacity	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,682	1,696
Estimated roadway 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
Curb utilization ratio	0.667	-	0.500	-	0.500	-	0.500	-	1.000	2.000
% occupancy in lane 1	0.660	-	0.490	-	0.490	-	0.490	-	0.895	1.000
% occupancy in lane 2	-	-	-	-	-	-	-	-	0.095	0.745
% occupancy in lane 3	-	-	-	-	-	-	-	-	-	0.25
# of cars in curbside lane	1.98	-	0.98	-	0.98	-	0.98	-	0.90	1.00
# of double-parked cars	-	-	-	-	-	-	-	-	0.10	0.75
# of triple-parked cars	-	-	-	-	-	-	-	-	-	0.245
Curbside LOS	A	A	A	A	A	A	A	A	A	E
Roadway LOS	A	A	A	A	A	A	A	A	A	B

# 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: Vhunto on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 No-Build, Curb 2  
 Level / Type of roadway 3 / 2  
 Total lanes / approach lanes 9  
 Number of curbside zones 9  
 % of 1st lane full when next vehicle double parks 80%  
 % of 2nd lane full when next vehicle triple parks 50%  
 Crosswalk adjustment factor 100%  
 Regional adjustment factor 95%

### Footage and dwell time per curbside operation

Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxis	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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	7

### Assumptions by zone

Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Name	Pax PU active	CW1 xwalk	Pax PU active	CW2 xwalk	Pax PU active	CW3 xwalk	Pax PU active	CW4 xwalk	CourtesyBus active
Curbside footage (feet)	190	20	115	20	115	20	115	20	50
Number of lanes	3	3	3	3	3	3	3	3	3
Number of approach lanes	2	2	2	2	2	2	2	2	2
Volume of vehicles using roadway (vph)	798	798	798	798	798	798	798	798	798
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-
Taxis	-	-	-	-	-	-	-	-	-
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	20	20	20	20	20	20	20	20	20
MBTA Silver Line	-	-	-	-	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	-
Volume of vehicles using curbside (vph)	125	-	76	-	76	-	76	-	-
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-
Taxis	-	-	-	-	-	-	-	-	-
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	-	-	-	-	-	-	-	-	20
MBTA Silver Line	-	-	-	-	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	-

# No Build/No Action (existing parking freeze remains)

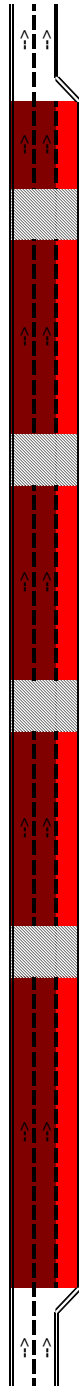
## Quick Analysis Tool for Airport Roadways

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

### Results: Level-of-Service by Zone

Model run by: Vhunt on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 No-Build, Curb 2  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 3 / 2  
 Number of curbside zones 9



Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9
Name/description	Pax PU	CW1	Pax PU	CW2	Pax PU	CW3	Pax PU	CW4	Courtesy/B
Curb length (feet)	190	20	115	20	115	20	115	20	50
Zone type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Roadway volume (vph)	818	818	818	818	818	818	818	818	818
Roadway capacity (vph)	722	2,657	722	2,657	722	2,657	722	2,657	722
Roadway V/C ratio	1.134	0.308	1.134	0.308	1.134	0.308	1.134	0.308	1.134
Roadway LOS	F	B	F	B	F	B	F	B	F
Curb demand (# in sys 95% of time)	15.0	N/A	10.0	N/A	10.0	N/A	10.0	N/A	2.0
Curb capacity per lane (vehicles)	8.0	N/A	5.0	N/A	5.0	N/A	5.0	N/A	1.0
Curb utilization ratio	1.875	N/A	2.000	N/A	2.000	N/A	2.000	N/A	2.000
Curb LOS	E	N/A	E	N/A	E	N/A	E	N/A	E

### Level-of-service (LOS) key:





# 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.

### Results: Detailed Report By Zone

Model run by: Vhunt on 3/15/2016

ID	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	CW4	CourtesyBus
Type of zone	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Curbside length (feet)	190	20	115	20	115	20	115	20	50
Number of lanes	3	3	3	3	3	3	3	3	3
Number of approach lanes	2	2	2	2	2	2	2	2	2
Roadway volume (vph)	818	818	818	818	818	818	818	818	818
Curbside demand (vph)	125	-	76	-	76	-	76	-	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%	100.0%
Regional adjustment factor	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
Through lane roadway capacity	760	2,797	760	2,797	760	2,797	760	2,797	760
Adjusted through lane roadway capacity	722	2,657	722	2,657	722	2,657	722	2,657	722
Estimated roadway V/C ratio	1.134	0.308	1.134	0.308	1.134	0.308	1.134	0.308	1.134
Curb capacity per lane (vehicles)	8.00	-	5.00	-	5.00	-	5.00	-	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	-	5.00	-	5.00	-	5.00	-	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	E	B	E	B	E	B	E	B	E
Roadway LOS	F	B	F	B	F	B	F	B	F

# 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: Vhunto on 3/15/2016

Airport	BOS
Roadway location	Terminal E
Scenario	2030 No-Build
Level / Type of roadway	Departures
Total lanes / approach lanes	4 / 2
Number of curbside zones	1
% of 1st lane full when next vehicle double parks	80%
% of 2nd lane full when next vehicle triple parks	50%
Crosswalk adjustment factor	100%
Regional adjustment factor	95%

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
Taxis	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	0.9
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	70	1
Logan Express	50	1
Scheduled Bus Service	50	2
Charter Bus	50	2

### Assumptions by zone

Zone ID Zone 1

Name All

Type active

Curbside frontage (feet) 635

Number of lanes 4

Number of approach lanes 2

### Volume of vehicles using roadway (vph)

Private Vehicle Drop-Off	375
Rental Car Drop-Off	-
Taxis	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	7
Scheduled Bus Service	8
Charter Bus	3

### Volume of vehicles using curbside (vph)

Private Vehicle Drop-Off	375
Rental Car Drop-Off	-
Taxis	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	7
Scheduled Bus Service	8
Charter Bus	3

# No Build/No Action (existing parking freeze remains)

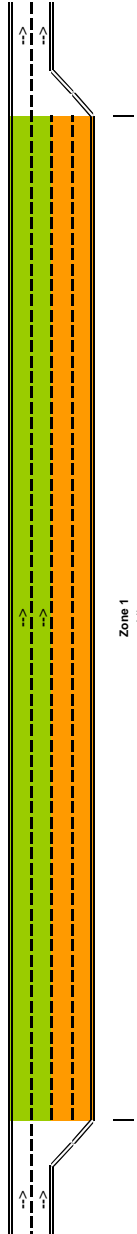
## Quick Analysis Tool for Airport Roadways

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

### Results: Level-of-Service by Zone

Model run by: Vhunt on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 No-Build  
 Level / type of roadway Departures  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 1



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
Zone 1	All	635	active	600	2,162	0.278	B	37.0	22.0	1.682	D

### Level-of-service (LOS) key:



# 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.

### Results: Detailed Report By Zone

Model run by: Vhunt on 3/15/2016

ID	Name	Zone 1
	Type of zone	All
	Curbside length (feet)	active
	Number of lanes	635
	Roadway volume (vph)	4
	Average demand (vph)	2
	Average vehicle length (feet)	600
	Average vehicle arrival rate (vph)	600
	Crosswalk adjustment factor	2.79
	Regional adjustment factor	28.60
	Through lane roadway capacity	600.00
	Adjusted through lane roadway capacity	100.0%
	Estimated roadway V/C ratio	95.0%
	Curb capacity per lane (vehicles)	2.277
	% occupancy in lane 1	2.162
	% occupancy in lane 2	0.278
	% occupancy in lane 3	22.00
	# of cars in curbside lane	1.682
	# of double-parked cars	1.000
	# of triple-parked cars	0.590
	Curbside LOS	0.09
	Roadway LOS	22.00
		12.98
		1.980
		D
		B

# Preferred Alternative (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: Welch on 3/15/2016

Airport	BOS
Roadway location	Terminal E
Scenario	2030 Build, Curb 1
Level / type of roadway	Arrivals
Total lanes / approach lanes	4 / 2
Number of curbside zones	11
% of 1st lane full when next vehicle double parks	80%
% of 2nd lane full when next vehicle triple parks	50%
Crosswalk adjustment factor	100%
Regional adjustment factor	95%

Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxis	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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	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	Zone 11
Name	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11
Type	report	Shuttles	CW1 & MBTA Blue active	CW2	Silver Line active	CW3	LE active	CW4	SchBus active	CW5	CharterBus active
Curbside frontage (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
Volume of vehicles using roadway (vph)	15	15	15	15	15	15	15	15	15	15	15
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-	-	-
Taxis	6	6	6	6	6	6	6	6	6	6	6
Economy Parking	6	6	6	6	6	6	6	6	6	6	6
MPA Employee	6	6	6	6	6	6	6	6	6	6	6
Water Taxi & Water Ferry	5	5	5	5	5	5	5	5	5	5	5
Interterminal	6	6	6	6	6	6	6	6	6	6	6
Rental Car and MBTA BL	15	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	23
Free Hotel or Other CS	20	20	20	20	20	20	20	20	20	20	20
MBTA Silver Line	6	6	6	6	6	6	6	6	6	6	6
Logan Express	7	7	7	7	7	7	7	7	7	7	7
Scheduled Bus Service	3	3	3	3	3	3	3	3	3	3	3
Charter Bus	3	3	3	3	3	3	3	3	3	3	3
Volume of vehicles using curbside (vph)	-	-	-	-	-	-	-	-	-	-	-
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-	-	-
Taxis	-	-	-	-	-	-	-	-	-	-	-
Economy Parking	6	6	6	6	6	6	6	6	6	6	6
MPA Employee	6	6	6	6	6	6	6	6	6	6	6
Water Taxi & Water Ferry	5	5	5	5	5	5	5	5	5	5	5
Interterminal	6	6	6	6	6	6	6	6	6	6	6
Rental Car and MBTA BL	-	-	15	-	-	-	-	-	-	-	-
Car Service	-	-	-	-	-	-	-	-	-	-	-
Other Shared Ride or Limo	-	-	-	-	-	-	-	-	-	-	-
Free Hotel or Other CS	-	-	-	-	-	-	-	-	-	-	-
MBTA Silver Line	-	-	-	-	6	-	-	-	-	-	-
Logan Express	-	-	-	-	-	-	7	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-	-	-
Charter Bus	-	-	-	-	-	-	-	-	3	-	3

**Preferred Alternative (existing parking freeze remains)**

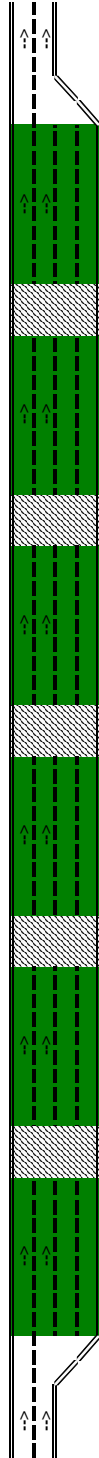
**Quick Analysis Tool for Airport Roadways**

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 BOS  
 Roadway location Terminal E  
 Scenario 2030 Build, Curb 1  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 11



Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11
Name/description	Airport Shuttles	CW1	Rental Car & MBTA Blue	CW2	Silver Line	CW3	LE	CW4	SchBus	CW5	CharterBus
Curb length (feet)	115	20	115	20	115	20	115	20	115	20	115
Zone type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Roadway volume (vph)	115	115	115	115	115	115	115	115	115	115	115
Roadway capacity (vph)	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,682
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
Roadway LOS	A	A	A	A	A	A	A	A	A	A	A
Curb demand (# in sys 95% of time)	2.0	N/A	1.0	N/A	1.0	N/A	1.0	N/A	1.0	N/A	2.0
Curb capacity per lane (vehicles)	3.0	N/A	2.0	N/A	2.0	N/A	2.0	N/A	2.0	N/A	2.0
Curb utilization ratio	0.667	N/A	0.500	N/A	0.500	N/A	0.500	N/A	0.500	N/A	1.000
Curb LOS	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A

**Level-of-service (LOS) key:**



**Preferred Alternative (existing parking freeze remains)**

**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

ID	Name	Zone 1 Airport Shuttles active	Zone 2 CW1 r & MBTA Blue xwalk	Zone 3 Blue active	Zone 4 CW2 xwalk	Zone 5 Silver Line active	Zone 6 CW3 xwalk	Zone 7 LE active	Zone 8 CW4 xwalk	Zone 9 SchBus active	Zone 10 CW5 xwalk	Zone 11 CharterBus active
	Type of zone	115	20	115	20	115	20	115	20	115	20	115
	Curbside length (feet)	4	4	4	4	4	4	4	4	4	4	4
	Number of lanes	2	2	2	2	2	2	2	2	2	2	2
	Number of approach lanes	115	115	115	115	115	115	115	115	115	115	115
	Roadway volume (vph)	23	-	15	-	6	-	7	-	3	-	3
	Curbside demand (vph)	1.20	-	1.30	-	0.80	-	2.10	-	3.40	-	7.20
	Average dwell time (minutes)	40.00	-	70.00	-	70.00	-	50.00	-	50.00	-	50.00
	Average vehicle length (feet)	23.00	-	15.00	-	6.00	-	7.00	-	3.00	-	3.00
	Average vehicle arrival rate (vph)	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
	Crosswalk adjustment factor	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%
	Regional adjustment factor	2.865	2.850	2.854	2.850	2.854	2.850	2.854	2.850	2.854	2.850	2.825
	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
	Adjusted through lane roadway capacity	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.042	0.043
	Estimated roadway V/C ratio	3.00	-	2.00	-	2.00	-	2.00	-	2.00	-	2.00
	Curb capacity per lane (vehicles)	0.667	-	0.500	-	0.500	-	0.500	-	0.500	-	1.000
	Curb utilization ratio	0.660	-	0.490	-	0.490	-	0.490	-	0.490	-	0.895
	% occupancy in lane 1	-	-	-	-	-	-	-	-	-	-	0.095
	% occupancy in lane 2	-	-	-	-	-	-	-	-	-	-	-
	% occupancy in lane 3	1.98	-	0.98	-	0.98	-	0.98	-	0.98	-	1.79
	# of cars in curbside lane	-	-	-	-	-	-	-	-	-	-	0.19
	# of double-parked cars	-	-	-	-	-	-	-	-	-	-	-
	# of triple-parked cars	-	-	-	-	-	-	-	-	-	-	-
	Curbside LOS	A	A	A	A	A	A	A	A	A	A	A
	Roadway LOS	A	A	A	A	A	A	A	A	A	A	A

# Preferred Alternative (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: Welch on 3/1/2016

Airport	BOS
Roadway location	Terminal E
Scenario	2030 Build, Curb2
Level / type of roadway	Arrivals
Total lanes / approach lanes	3 / 2
Number of curbside zones	5
% of 1st lane full when next vehicle double parks	80%
% of 2nd lane full when next vehicle triple parks	50%
Crosswalk adjustment factor	100%
Regional adjustment factor	95%

Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxis	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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	7

### Assumptions by zone

Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Name	Pax Pickup	CW1	Pax Pickup	CW2	Pax Pickup
Type	active	xwalk	active	xwalk	active
Curbside frontage (feet)	190	20	115	20	530
Number of lanes	3	3	3	3	3
Number of approach lanes	2	2	2	2	2
Volume of vehicles using roadway (vph)					
Private Vehicle Pick-Up	708	708	708	708	708
Taxis	-	-	-	-	-
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 Pick-Up	70	-	42	-	195
Taxis	-	-	-	-	-
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	-	-	-	-	-



# Preferred Alternative (existing parking freeze remains)

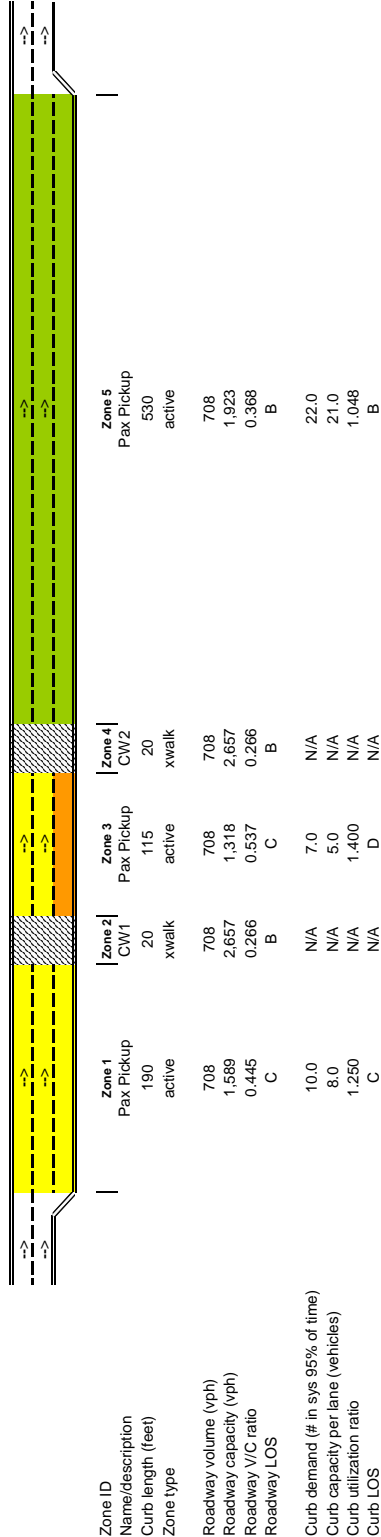
## Quick Analysis Tool for Airport Roadways

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 BOS  
 Roadway/location Terminal E  
 Scenario 2030 Build, Curb 2  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 3 / 2  
 Number of curbside zones 5



### Level-of-service (LOS) key:



**Preferred Alternative (existing parking freeze remains)**

**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

ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Name	Pax Pickup active	CW1 xwalk	Pax Pickup active	CW2 xwalk	Pax Pickup active
Type of zone	190	20	115	20	530
Curbside length (feet)	3	3	3	3	3
Number of lanes	2	2	2	2	2
Number of approach lanes	708	708	708	708	708
Roadway volume (vph)	70	-	42	-	195
Curbside demand (vph)	4.70	-	4.70	-	4.70
Average dwell time (minutes)	25.00	-	25.00	-	25.00
Average vehicle length (feet)	70.00	-	42.00	-	195.00
Average vehicle arrival rate (vph)	100.0%	100.0%	100.0%	100.0%	100.0%
Crosswalk adjustment factor	1.674	2.797	1.389	2.797	2.025
Regional adjustment factor	1.589	2.657	1.318	2.657	1.923
Through lane roadway capacity	0.445	0.266	0.537	0.266	0.368
Adjusted through lane roadway capacity	8.00	-	5.00	-	21.00
Estimated roadway V/C ratio	1.250	-	1.400	-	1.048
Curb capacity per lane (vehicles)	1,000	-	1,000	-	0,920
Curb utilization ratio	0.240	-	0.390	-	0.120
% occupancy in lane 1	-	-	-	-	-
% occupancy in lane 2	8.00	-	5.00	-	19.32
% occupancy in lane 3	1.92	-	1.95	-	2.52
# of cars in curbside lane	-	-	-	-	-
# of double-parked cars	C	B	D	B	B
# of triple-parked cars	C	B	C	B	B
Curbside LOS					
Roadway LOS					

# Preferred Alternative (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: Welch on 3/15/2016

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

Vehicle class	Frontage and dwell time per curbside operation Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Drop-Off	25.0	3.4
Rental Car Drop-Off	25.0	3.4
Taxis	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	0.9
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	70	1
Logan Express	50	1
Scheduled Bus Service	50	2
Charter Bus	50	2

### Assumptions by zone

Zone ID Zone 1  
 Name All  
 Type active  
 Curbside frontage (feet) 635  
 Number of lanes 4  
 Number of approach lanes 2

### Volume of vehicles using roadway (vph)

Private Vehicle Drop-Off 375  
 Rental Car Drop-Off -  
 Taxis -  
 Economy Parking 65  
 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 7  
 Scheduled Bus Service 8  
 Charter Bus 3

### Volume of vehicles using curbside (vph)

Private Vehicle Drop-Off 375  
 Rental Car Drop-Off -  
 Taxis 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 -

# Preferred Alternative (existing parking freeze remains)

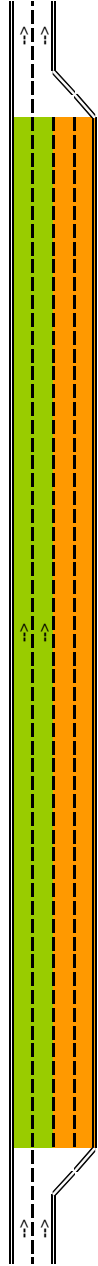
## Quick Analysis Tool for Airport Roadways

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 BOS  
 Roadway/location Terminal E  
 Scenario 2030 Build  
 Level / type of roadway Departures  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 1



Zone ID	Zone 1
Name/description	All
Curb length (feet)	635
Zone type	active
Roadway volume (vph)	600
Roadway capacity (vph)	2,162
Roadway V/C ratio	0.278
Roadway LOS	B
Curb demand (# in sys 95% of time)	37.0
Curb capacity per lane (vehicles)	22.0
Curb utilization ratio	1.682
Curb LOS	D

### Level-of-service (LOS) key:



**Preferred Alternative (existing parking freeze remains)**

**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

ID	Name	Zone 1
	All	
	active	
	Curbside length (feet)	635
	Number of lanes	4
	Number of approach lanes	2
	Roadway volume (vph)	600
	Curbside demand (vph)	600
	Average dwell time (minutes)	2.79
	Average vehicle length (feet)	28.60
	Average vehicle arrival rate (vph)	600.00
	Crosswalk adjustment factor	100.00%
	Regional adjustment factor	95.0%
	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	D
	Roadway LOS	B

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

## 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: Vhunto on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 Build, Curb 1  
 Level / Type of roadway 4 / 2  
 Total lanes / approach lanes 11  
 Number of curbside zones 80%  
 % of 1st lane full when next vehicle double parks 50%  
 % of 2nd lane full when next vehicle triple parks 100%  
 Crosswalk adjustment factor 95%  
 Regional adjustment factor

Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxis	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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	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	Zone 11
Name	AS	CW1	RC&BL	CW2	SL	CW3	LE	CW4	SchBus	CW5	CharterBus
Type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Curbside frontage (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
Volume of vehicles using roadway (vph)	15	15	15	15	15	15	15	15	15	15	15
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-	-	-
Taxis	6	6	6	6	6	6	6	6	6	6	6
Economy Parking	6	6	6	6	6	6	6	6	6	6	6
MPA Employee	5	5	5	5	5	5	5	5	5	5	5
Water Taxi & Water Ferry	6	6	6	6	6	6	6	6	6	6	6
Interterminal	15	15	15	15	15	15	15	15	15	15	15
Rental Car and MBTA BL	-	-	-	-	-	-	-	-	-	-	-
Car Service	23	23	23	23	23	23	23	23	23	23	23
Other Shared Ride or Limo	20	20	20	20	20	20	20	20	20	20	20
Free Hotel or Other CS	6	6	6	6	6	6	6	6	6	6	6
MBTA Silver Line	7	7	7	7	7	7	7	7	7	7	7
Logan Express	3	3	3	3	3	3	3	3	3	3	3
Scheduled Bus Service	3	3	3	3	3	3	3	3	3	3	3
Charter Bus	-	-	-	-	-	-	-	-	-	-	-
Volume of vehicles using curbside (vph)	-	-	-	-	-	-	-	-	-	-	-
Private Vehicle Pick-Up	-	-	-	-	-	-	-	-	-	-	-
Taxis	-	-	-	-	-	-	-	-	-	-	-
Economy Parking	6	6	6	6	6	6	6	6	6	6	6
MPA Employee	5	5	5	5	5	5	5	5	5	5	5
Water Taxi & Water Ferry	6	6	6	6	6	6	6	6	6	6	6
Interterminal	15	15	15	15	15	15	15	15	15	15	15
Rental Car and MBTA BL	-	-	-	-	-	-	-	-	-	-	-
Car Service	-	-	-	-	-	-	-	-	-	-	-
Other Shared Ride or Limo	-	-	-	-	-	-	-	-	-	-	-
Free Hotel or Other CS	-	-	-	-	-	-	-	-	-	-	-
MBTA Silver Line	-	-	-	-	6	-	-	-	-	-	-
Logan Express	-	-	-	-	-	-	-	-	-	-	-
Scheduled Bus Service	-	-	-	-	-	-	-	-	-	-	3
Charter Bus	-	-	-	-	-	-	-	-	-	-	-

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

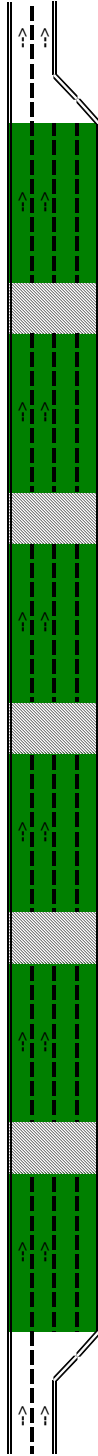
## Quick Analysis Tool for Airport Roadways

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 BOS  
 Roadway location Terminal E  
 Scenario 2030 Build, Curb 1  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 11



Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10	Zone 11
Name/description	AS	CW1	RC&BL	CW2	SL	CW3	LE	CW4	SchBus	CW5	CharterBus
Curb length (feet)	115	20	115	20	115	20	115	20	115	20	115
Zone type	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active	xwalk	active
Roadway volume (vph)	115	115	115	115	115	115	115	115	115	115	115
Roadway capacity (vph)	2,720	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,710	2,708	2,682
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
Roadway LOS	A	A	A	A	A	A	A	A	A	A	A
Curb demand (# in sys 95% of time)	2.0	N/A	1.0	N/A	1.0	N/A	1.0	N/A	1.0	N/A	2.0
Curb capacity per lane (vehicles)	3.0	N/A	2.0	N/A	2.0	N/A	2.0	N/A	2.0	N/A	2.0
Curb utilization ratio	0.667	N/A	0.500	N/A	0.500	N/A	0.500	N/A	0.500	N/A	1.000
Curb LOS	A	N/A	A	N/A	A	N/A	A	N/A	A	N/A	A

### Level-of-service (LOS) key:



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

## 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

ID	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	LE	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	-	6	-	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	-	50.00	-	50.00	-	50.00
Average vehicle arrival rate (vph)	23.00	-	15.00	-	6.00	-	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	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	95.0%	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	-	-	-	-	-	-	-	-	-	-	-
Curbside LOS	A	A	A	A	A	A	A	A	A	A	A
Roadway LOS	A	A	A	A	A	A	A	A	A	A	A



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

## 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: Welch on 3/15/2016

Airport	BOS
Roadway location	Terminal E
Scenario	2030 Build, Curb2
Level / type of roadway	Arrivals
Total lanes / approach lanes	3 / 2
Number of curbside zones	5
% of 1st lane full when next vehicle double parks	80%
% of 2nd lane full when next vehicle triple parks	50%
Crosswalk adjustment factor	100%
Regional adjustment factor	95%

Vehicle class	Vehicle parking length (feet)	Average dwell time (minutes)
Private Vehicle Pick-Up	25.0	4.7
Taxis	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	50	2
Scheduled Bus Service	50	3
Charter Bus	50	7

### Assumptions by zone

Zone ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Name	Pax Pickup active	CW1 xwalk	Pax Pickup active	CW2 xwalk	Pax Pickup active
Type	active	xwalk	active	xwalk	active
Curbside frontage (feet)	190	20	115	20	530
Number of lanes	3	3	3	3	3
Number of approach lanes	2	2	2	2	2
Volume of vehicles using roadway (vph)	648	648	648	648	648
Private Vehicle Pick-Up	-	-	-	-	-
Taxis	-	-	-	-	-
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)	56	-	34	-	157
Private Vehicle Pick-Up	-	-	-	-	-
Taxis	-	-	-	-	-
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	-	-	-	-	-

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

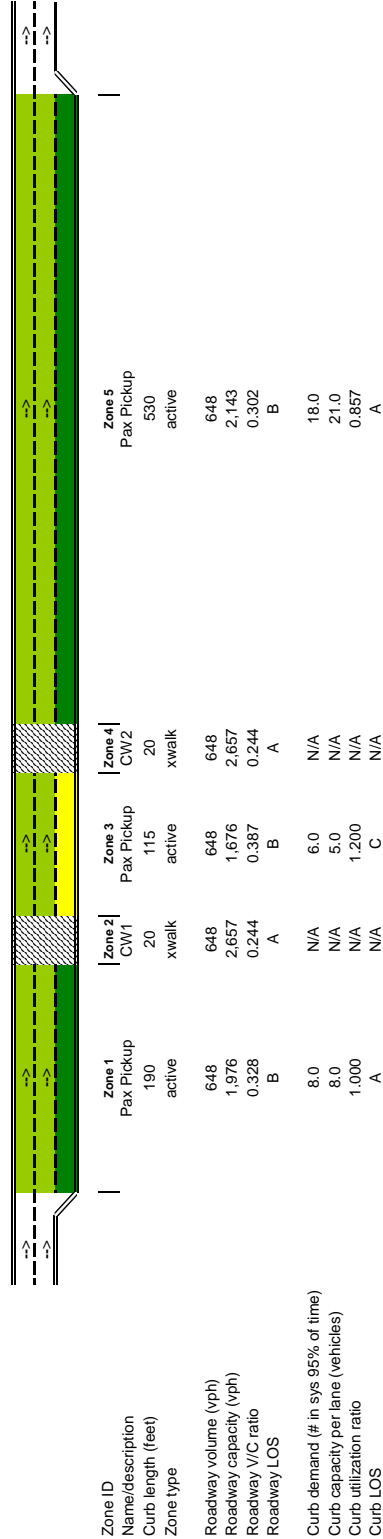
## Quick Analysis Tool for Airport Roadways

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 BOS  
 Roadway/location Terminal E  
 Scenario 2030 Build, Curb 2  
 Level / type of roadway Arrivals  
 Total lanes / approach lanes 3 / 2  
 Number of curbside zones 5



### Level-of-service (LOS) key:



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

**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

ID	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Name	Pax Pickup active	CW1 xwalk	Pax Pickup active	CW2 xwalk	Pax Pickup active
Type of zone	190	20	115	20	530
Curbside length (feet)	3	3	3	3	3
Number of lanes	2	2	2	2	2
Number of approach lanes	648	648	648	648	648
Roadway volume (vph)	56	-	34	-	157
Curbside demand (vph)	4.70	-	4.70	-	4.70
Average dwell time (minutes)	25.00	-	25.00	-	25.00
Average vehicle length (feet)	56.00	-	34.00	-	157.00
Average vehicle arrival rate (vph)	100.0%	100.0%	100.0%	100.0%	100.0%
Crosswalk adjustment factor	95.0%	95.0%	95.0%	95.0%	95.0%
Regional adjustment factor	2.082	2.797	1.765	2.797	2.257
Through lane roadway capacity	1.976	2.657	1.676	2.657	2.143
Adjusted through lane roadway capacity	0.328	0.244	0.387	0.244	0.302
Estimated roadway V/C ratio	8.00	-	5.00	-	21.00
Curb capacity per lane (vehicles)	1.000	-	1.200	-	0.857
Curb utilization ratio	0.895	-	0.995	-	0.825
% occupancy in lane 1	0.095	-	0.195	-	0.025
% occupancy in lane 2	-	-	-	-	-
% occupancy in lane 3	7.16	-	4.98	-	17.33
# of cars in curbside lane	0.76	-	0.98	-	0.53
# of double-parked cars	-	-	-	-	-
# of triple-parked cars	-	-	-	-	-
Curbside LOS	A	A	C	A	A
Roadway LOS	B	A	B	A	B

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

## 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: Welch on 3/15/2016

Airport BOS  
 Roadway location Terminal E  
 Scenario 2030 Build  
 Level / Type of roadway Departures  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 1  
 % of 1st lane full when next vehicle double parks 80%  
 % of 2nd lane full when next vehicle triple parks 50%  
 Crosswalk adjustment factor 100%  
 Regional adjustment factor 95%

### 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 MBTA BL	70.0	0.9
Car Service	30.0	1.4
Other Shared Ride or Limo	30.0	0.9
Free Hotel or Other CS	40.0	2.7
MBTA Silver Line	70	1
Logan Express	50	1
Scheduled Bus Service	50	2
Charter Bus	50	2

### Assumptions by zone

Zone ID	Zone Name
Zone 1	All
active	active
635	635
4	4
2	2

### Volume of vehicles using roadway (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	7
Scheduled Bus Service	8
Charter Bus	3

### 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	7
Scheduled Bus Service	8
Charter Bus	3

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

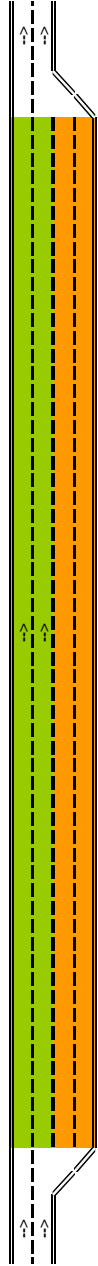
## Quick Analysis Tool for Airport Roadways

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 BOS  
 Roadway/location Terminal E  
 Scenario 2030 Build  
 Level / type of roadway Departures  
 Total lanes / approach lanes 4 / 2  
 Number of curbside zones 1



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
Zone 1	All	635	active	600	2,162	0.278	B	37.0	22.0	1.682	D

### Level-of-service (LOS) key:



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

## 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

ID	Name	Zone 1
	All	All
	Type of zone	active
	Curbside length (feet)	635
	Number of lanes	4
	Number of approach lanes	2
	Roadway volume (vph)	600
	Curbside demand (vph)	600
	Average dwell time (minutes)	2.79
	Average vehicle length (feet)	28.60
	Average vehicle arrival rate (vph)	600.00
	Crosswalk adjustment factor	100.0%
	Regional adjustment factor	95.0%
	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	D
	Roadway LOS	B

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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
$V_R$	821
$V_F$	1211
$f_{hvR}$	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
$V_R$	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	

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 Diverge\_Analysis\_mod.xlsx

DivergeMD\_2

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!
$V_R$	#DIV/0!
$V_F$	857
$f_{hvR}$	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
$V_R$		$V_F$	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!
$V_R$	#DIV/0!
$V_F$	560
$f_{hvR}$	1.00
$f_{hvF}$	0.92
$f_p$	0.85 From HCM 2010 Text/Table, unfamiliar drivers
$PHF_R$	#DIV/0!
$PHF_F$	0.90

Knowns:

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 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
$V_R$	820
$V_F$	1949
$f_{hvR}$	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	

## Weave Calc\_6

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

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

D	50
$V_t$	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 Calcd from Terminal E Entrance and C-E Connector Roadway

Knowns:

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	

## Weave Calc\_9

Departure TAR Between Terminal C merge and Terminal 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

### Knowns:

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

## Weave Calc\_10

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

D	47
$V_t$	2659
$V_{FF}$	1104
$V_{FR}$	740
$V_{RF}$	786
$V_{RR}$	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

### Knowns:

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

Merge\_12

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

Merge\_13

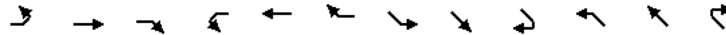
Arrival Exit merge to exit to TWT/SCT/Rt1A or TAR

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 drivers
$PHF_R$	0.95
$PHF_F$	0.92

Knowns:

HV%	0.39	HV%	0.02
$E_T$	1.5	$E_T$	1.5
$V_R$	1030	$V_F$	2131
$V_{existing}$	731	$V_{existing}$	1215
$V_{p15}$	192	$V_{p15}$	330
$L_A$	175		
$P_{FD}$	1	From Table 13-7 HCM 2010	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
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
Fit 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 Utilization	49.6%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Vol, veh/h	0	0	0	0	55	160	0	0	0	805	300	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	89	258	0	0	0	885	330	0

Major/Minor	Minor2			Major2		
Conflicting Flow All	2099	2099	330	0	0	0
Stage 1	2099	2099	-	-	-	-
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	25	- 35	588	-	-	-
Stage 1	45	- 62	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	25	0	588	-	-	-
Mov Cap-2 Maneuver	25	0	-	-	-	-
Stage 1	45	0	-	-	-	-
Stage 2	-	0	-	-	-	-

Approach	WB	NW
HCM Control Delay, s	19.5	
HCM LOS	C	

Minor Lane/Major Mvmt	NWL	NWT	NWR	WBLn1
Capacity (veh/h)	-	-	-	588
HCM Lane V/C Ratio	-	-	-	0.59
HCM Control Delay (s)	-	-	-	19.5
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	3.8

**Notes**  
 -: 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		
$P_{FD}$	1	From Table 13-7 HCM 2010	

DivergeMD\_2

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

D	7
$V_{12}$	#DIV/0!
$V_R$	#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

Knowns:

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

Scenario: 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, unfamiliar drivers
$PHF_R$	#DIV/0!
$PHF_F$	0.90

Knowns:

HV%		HV%	0.18
$E_T$		$E_T$	1.5
$V_R$		$V_F$	278
$V_{existing}$		$V_{existing}$	194
$V_{p15}$		$V_{p15}$	54
$L_D$	85		
$P_{FD}$	1	From Table 13-7 HCM 2010	
N	2		



Merge\_4

Departure Exit Ramp to TWT Exit Ramp

Scenario: Preferred Alternative (existing parking freeze remains)

D	26
$V_{12}$	2518
$V_R$	358
$V_F$	2518
$f_{hvR}$	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	
$L_A$	250			
$P_{FD}$	1			From Table 13-7 HCM 2010

Diverge\_5

Arrival Entrance Ramp from TAR

Scenario: Preferred Alternative (existing parking freeze remains)

D	18
$V_{12}$	1959
$V_R$	1057
$V_F$	1959
$f_{hvR}$	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
$V_R$	792	$V_F$	1518
$V_{existing}$	483	$V_{existing}$	1215
$V_{p15}$	133	$V_{p15}$	330
$L_D$	330		
$P_{FD}$	1	From Table 13-7 HCM 2010	

## Weave Calc\_6

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

Knowns:

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

Merge\_7

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, 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
$V_R$	765	$V_F$	1966
$V_{existing}$	621	$V_{existing}$	1215
$V_{p15}$	164	$V_{p15}$	330
$L_A$	250		
$P_{FD}$	1	From Table 13-7 HCM 2010	

## Merge\_8

### Ramps from Departure and Arrival to Service Rd

Scenario: Preferred Alternative (existing parking freeze remains)

D	6
$V_{12}$	243
$V_R$	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		
$P_{FD}$	1	From Table 13-7 HCM 2010	

## Weave Calc\_9

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

### Knowns:

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

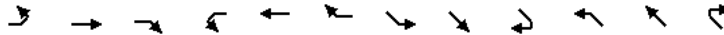
## Weave Calc\_10

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

D	55
$V_t$	2893
$V_{FF}$	1172
$V_{FR}$	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 Calcd from Terminal E Entrance and C-E Connector Roadway

### Knowns:

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
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
Fit 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 Utilization	29.4%
ICU Level of Service	A
Analysis Period (min)	15



Intersection															
Int Delay, s/veh	2.7														
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						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	B														
Minor Lane/Major Mvmt	NWL	NWT	NWR	WBLn1											
Capacity (veh/h)	-	-	-	893											
HCM Lane V/C Ratio	-	-	-	0.235											
HCM Control Delay (s)	-	-	-	10.3											
HCM Lane LOS	-	-	-	B											
HCM 95th %tile Q(veh)	-	-	-	0.9											

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
$f_{hvR}$	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
$V_R$	561	$V_F$	764
$V_{existing}$	437	$V_{existing}$	668
$V_{p15}$	121	$V_{p15}$	203
$L_D$	330		
$P_{FD}$	1	From Table 13-7 HCM 2010	

DivergeMD\_2

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

Knowns:

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
$V_{12}$	#DIV/0!
$V_R$	#DIV/0!
$V_F$	554
$f_{hvR}$	1.00
$f_{hvF}$	0.92
$f_p$	0.85 From HCM 2010 Text/Table, unfamiliar drivers
$PHF_R$	#DIV/0!
$PHF_F$	0.90

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
$L_D$	85		
$P_{FD}$	1	From Table 13-7 HCM 2010	
N	2		

Merge\_4

Departure Exit Ramp to TWT Exit Ramp

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

D	28
$V_{12}$	2490
$V_R$	572
$V_F$	2490
$f_{hvR}$	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			
$P_{FD}$	1	From Table 13-7 HCM 2010		

Diverge\_5

Arrival Entrance Ramp from TAR

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

D	18
$V_{12}$	1923
$V_R$	903
$V_F$	1923
$f_{hvR}$	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
$V_R$	677	$V_F$	1489
$V_{existing}$	483	$V_{existing}$	1215
$V_{p15}$	133	$V_{p15}$	330
$L_D$	330		
$P_{FD}$	1	From Table 13-7 HCM 2010	

## Weave Calc\_6

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

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

D	34
$V_t$	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

Knowns:

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

Merge\_7

Arrival Exit Ramp to TWT/SCT/Rt1A Exit Ramp

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

D	27
$V_{12}$	2386
$V_R$	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		
$P_{FD}$	1	From Table 13-7 HCM 2010	



## Merge\_8

### Ramps from Departure and Arrival to Service Rd

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

D	6
$V_{12}$	231
$V_R$	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		
$P_{FD}$	1	From Table 13-7 HCM 2010	

## Weave Calc\_9

Departure TAR between Terminal C merge and Terminal E diverge

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

D	75
$V_t$	1890
$V_{FF}$	599
$V_{FR}$	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

### Knowns:

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

## Weave Calc\_10

Arrival TAR between Terminal C merge and Terminal E diverge

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

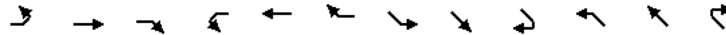
D	45
$V_t$	2713
$V_{FF}$	1210
$V_{FR}$	819
$V_{RF}$	655
$V_{RR}$	29
$f_{hv}$	0.98
$f_p$	0.85 From HCM 2010 Text/Table, unfamiliar drivers
PHF	0.96 Previously Calced from Terminal E Entrance and C-E Connector Roadway

### Knowns:

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

3: Terminal E Entry Ramp & C-E Connector Roadway

Evening Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
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
Fit 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 Utilization	22.9%
ICU Level of Service	A
Analysis Period (min)	15

Intersection												
Int Delay, s/veh	3.9											
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	285	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	313	27	0
Major/Minor	Minor2						Major2					
Conflicting Flow All	654 654 27						0 0 0					
Stage 1	654 654 -						- - -					
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	305 316 893						- - -					
Stage 1	366 379 -						- - -					
Stage 2	- - -						- - -					
Platoon blocked, %	-						-					
Mov Cap-1 Maneuver	305 0 893						- - -					
Mov Cap-2 Maneuver	305 0 -						- - -					
Stage 1	366 0 -						- - -					
Stage 2	- 0 -						- - -					
Approach	WB						NW					
HCM Control Delay, s	10.3											
HCM LOS	B											
Minor Lane/Major Mvmt	NWL	NWT	NWR	WBLn1								
Capacity (veh/h)	-	-	-	893								
HCM Lane V/C Ratio	-	-	-	0.235								
HCM Control Delay (s)	-	-	-	10.3								
HCM Lane LOS	-	-	-	B								
HCM 95th %tile Q(veh)	-	-	-	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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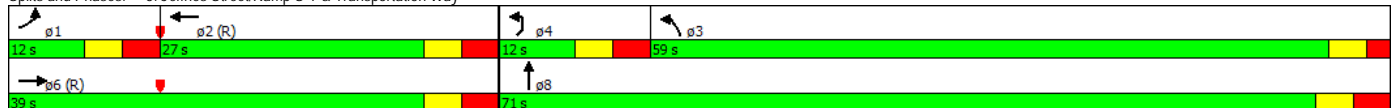


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↖	↕	↕	↖	↖	↕	↖	↖
Volume (vph)	102	630	448	142	681	1022	37	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25				25			
Satd. Flow (prot)	1662	3505	3241	0	1728	3556	0	933
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1662	3505	3241	0	1728	3556	0	933
Right Turn on Red				Yes			Yes	
Satd. Flow (RTOR)			35			6		
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 (%)								
Lane Group Flow (vph)	111	685	641	0	740	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								
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 Effect Green (s)	9.6	40.5	27.0		52.9	61.5		8.0
Actuated g/C Ratio	0.09	0.37	0.25		0.48	0.56		0.07
v/c Ratio	0.77	0.53	0.78		0.89	0.58		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	E	D	D		D	B		F
Approach Delay		40.6	46.7			25.9		
Approach LOS		D	D			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)	200							
Base Capacity (vph)	144	1291	820		879	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	0.77	0.53	0.78		0.84	0.53		0.63

**Intersection Summary**

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 34.1 Intersection LOS: C  
 Intersection Capacity Utilization 77.0% ICU Level of Service D  
 Analysis Period (min) 15  
 # 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: 5: Jeffries Street/Ramp S-T & Transportation Way**







Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↘	↕	↕		↘	↕		↘
Volume (vph)	102	630	448	142	681	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		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)	111	685	487	154	740	1111	40	42
RTOR Reduction (vph)	0	0	27	0	0	3	0	0
Lane Group Flow (vph)	111	685	614	0	740	1148	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)	7.6	37.3	23.7		50.9	60.7		4.8
Effective Green, g (s)	9.6	39.3	25.7		52.9	62.7		6.8
Actuated g/C Ratio	0.09	0.36	0.23		0.48	0.57		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)	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	C	D		D	B		F
Approach Delay (s)		37.8	49.9			24.2		
Approach LOS		D	D			C		

Intersection Summary				
HCM 2000 Control Delay		33.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio		0.84		
Actuated Cycle Length (s)		110.0	Sum of lost time (s)	15.0
Intersection Capacity Utilization		77.0%	ICU Level of Service	D
Analysis Period (min)		15		
c Critical Lane Group				

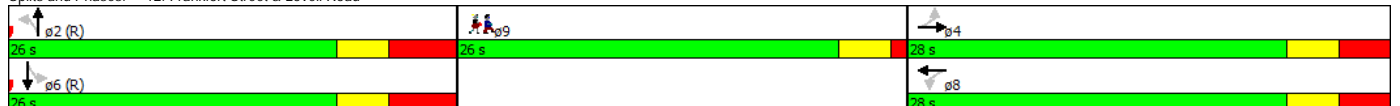


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations		↕			↕		↕	↕			↕		
Volume (vph)	0	0	129	59	0	51	252	450	34	20	64	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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					0.747		0.677				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			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 Effect 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		0.5			11.2		26.1	13.4			9.8		
LOS		A			B		C	B			A		
Approach Delay		0.5			11.2			17.7			9.8		
Approach LOS		A			B			B			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			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

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 14.2 Intersection LOS: B  
 Intersection Capacity Utilization 59.6% 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Frankfort Street & Lovell Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
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		C			C		C	B			A	
Approach Delay (s)		26.7			26.7			15.3			9.1	
Approach LOS		C			C			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		17.2										B
HCM 2000 Volume to Capacity ratio		0.57										
Actuated Cycle Length (s)		80.0						Sum of lost time (s)	15.0			
Intersection Capacity Utilization		59.6%						ICU Level of Service				B
Analysis Period (min)		15										

c Critical Lane Group



Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑↑	↑	↔	↔	↔	↔	↔	↔	↔	
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)	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	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 (%)	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)	508	305	9	795	432	0	0	512	508	
Turn Type	NA	pm+ov	NA	Prot	custom		Perm	NA	Perm	
Protected Phases	4	2	8	2	2			3		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?							Yes	Yes	Yes	
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effect Green (s)	26.6	64.2	26.6	31.5	58.8		22.2	20.2		
Actuated g/C Ratio	0.24	0.58	0.24	0.29	0.53		0.20	0.18		
v/c Ratio	0.64	0.35	0.02	0.88	0.60		0.84	0.73		
Control Delay	45.3	16.7	43.5	50.9	18.2		52.8	6.8		
Queue Delay	0.0	0.0	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	D	B	D	D	B		D	A		
Approach Delay	34.6		43.5				29.9			
Approach LOS	C		D				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		109				203			
Turn Bay Length (ft)		200		300						
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		

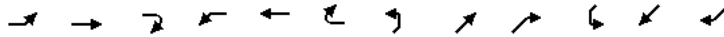
Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:NBL, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 35.0 Intersection LOS: C  
 Intersection Capacity Utilization 68.9% ICU Level of Service C  
 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.

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



	→	↘	←	↙	↑	↗	↘	↓	↙	
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	
Lane Configurations	↑↑	↗	↔	↗	↗			↗	↗	
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	
Adj. Flow (vph)	508	305	9	795	42	390	22	490	508	
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					
v/s Ratio Perm		0.09			0.14			0.17	0.06	
v/c Ratio	0.64	0.37	0.02	0.93	0.58			0.84	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	0.3	
Delay (s)	38.3	17.1	31.8	56.6	24.7			49.5	0.3	
Level of Service	D	B	C	E	C			D	A	
Approach Delay (s)	30.3		31.8					25.0		
Approach LOS	C		C					C		
<b>Intersection Summary</b>										
HCM 2000 Control Delay			34.6						HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.69							
Actuated Cycle Length (s)			110.0						Sum of lost time (s)	19.0
Intersection Capacity Utilization			68.9%						ICU Level of Service	C
Analysis Period (min)			15							
c	Critical Lane Group									

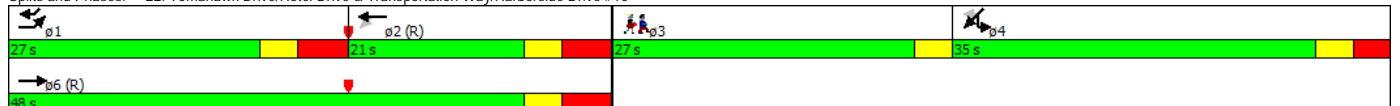


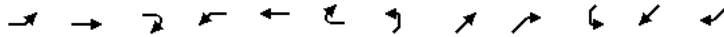
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3
Lane Configurations													
Volume (vph)	229	91	345	4	141	192	0	0	0	148	558	450	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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			25			25			25			
Satd. Flow (prot)	1770	3001	0	0	2771	0	0	0	0	0	3352	1583	
Flt Permitted	0.950				0.950						0.990		
Satd. Flow (perm)	1770	3001	0	0	2635	0	0	0	0	0	3352	1583	
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		*60			209								489
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 (%)													
Lane Group Flow (vph)	249	474	0	0	366	0	0	0	0	0	768	489	
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)	27.0	48.0		21.0	21.0					35.0	35.0	27.0	27.0
Total Split (%)	24.5%	43.6%		19.1%	19.1%					31.8%	31.8%	24.5%	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?										Yes	Yes		Yes
Recall Mode	None	C-Max		C-Max	C-Max					None	None	None	None
Act Effect Green (s)	19.9	60.7			35.8					29.5	29.5	53.4	
Actuated g/C Ratio	0.18	0.55			0.33					0.27	0.27	0.49	
v/c Ratio	0.78	0.28			0.37					0.86	0.86	0.48	
Control Delay	65.6	24.4			16.6					48.6	48.6	3.0	
Queue Delay	0.0	0.0			0.0					0.0	0.0	0.0	
Total Delay	65.6	24.4			16.6					48.6	48.6	3.0	
LOS	E	C			B					D	D	A	
Approach Delay		38.6			16.6					30.8	30.8		
Approach LOS		D			B					C	C		
Queue Length 50th (ft)	178	103			37					264	264	0	
Queue Length 95th (ft)	#267	177			105					341	341	49	
Internal Link Dist (ft)		350			939			442		395	395		
Turn Bay Length (ft)	250											150	
Base Capacity (vph)	354	1683			998					946	946	1040	
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	0.70	0.28			0.37					0.81	0.81	0.47	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 31.0 Intersection LOS: C  
 Intersection Capacity Utilization 55.3% ICU Level of Service B  
 Analysis Period (min) 15  
 † User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	229	91	345	4	141	192	0	0	0	148	558	450
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			2635						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)	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	0	269
Lane Group Flow (vph)	249	446	0	0	222	0	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
Permitted Phases				2								4
Actuated Green, G (s)	17.9	56.9			32.0						27.5	45.4
Effective Green, g (s)	19.9	58.9			34.0						29.5	49.4
Actuated g/C Ratio	0.18	0.54			0.31						0.27	0.45
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)	320	1607			814						898	710
v/s Ratio Prot	c0.14	c0.15									c0.23	0.06
v/s Ratio Perm					0.08							0.08
v/c Ratio	0.78	0.28			0.27						0.86	0.31
Uniform Delay, d1	42.9	13.9			28.7						38.2	19.4
Progression 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
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		

c Critical Lane Group

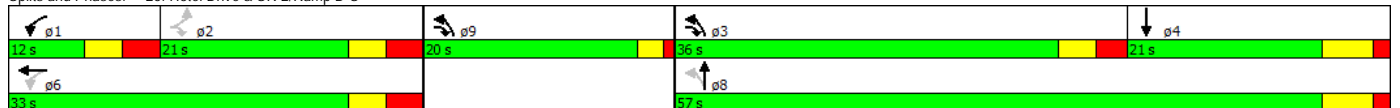


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø3	ø9
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔		
Volume (vph)	85	0	204	170	153	63	389	214	0	0	328	7		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%				0%		0%			0%			
Storage Length (ft)	0		0	100		0	0		0	0		0		
Storage Lanes	1		1	1		0	1		0	0		0		
Taper Length (ft)	25			25			25			25				
Satd. Flow (prot)	1583	0	1417	1752	1405	0	1583	1667	0	0	1468	0		
Flt Permitted	0.613			0.950			0.185							
Satd. Flow (perm)	1022	0	1417	1752	1405	0	308	1667	0	0	1468	0		
Right Turn on Red			Yes			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			
Total Lost Time (s)	5.0			5.0	5.0			4.5			4.5			
Lead/Lag	Lag			Lead							Lag		Lead	
Lead-Lag Optimize?														
Recall Mode	None			None	None			None			None		None	None
Act Effect Green (s)	12.1		39.0	24.5	24.5		43.3	40.1			17.0			
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		A	C	C		C	B			F			
Approach Delay					25.7			22.5			125.2			
Approach LOS					C			C			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			

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 77.5  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.14  
 Intersection Signal Delay: 43.7  
 Intersection LOS: D  
 Intersection Capacity Utilization 70.8%  
 ICU Level of Service C  
 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.

Splits and Phases: 25: Hotel Drive & SR-2/Ramp D-S





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		B	C	C		C	B			F	
Approach Delay (s)		20.4			22.5			20.5			131.3	
Approach LOS		C			C			C			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			44.0									D
HCM 2000 Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			79.7						22.0			
Intersection Capacity Utilization			70.8%									C
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations		↕	↕	↕		↕		↕			↕	↕	
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	
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	2760	0	0	3065	0	
Flt Permitted		0.961		0.950							0.675		
Satd. Flow (perm)	0	1558	1468	1480	0	1369	0	2760	0	0	2087	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			467			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)													
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	315	636	167	0	122	0	610	0	0	763	0	
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA		
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	-2.0		
Total Lost Time (s)		4.0	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 Effect Green (s)	13.2	13.2	13.2	12.1		12.1		29.4		29.4	29.4		
Actuated g/C Ratio	0.19	0.19	0.19	0.17		0.17		0.42		0.42	0.42		
v/c Ratio	1.08	0.97	0.66	0.66		0.36		0.45		0.45	0.87		
Control Delay	108.0	40.0	43.2	43.2		10.0		8.6		8.6	34.1		
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0		
Total Delay	108.0	40.0	43.2	43.2		10.0		8.6		8.6	34.1		
LOS	F	D	D	D		A		A		A	C		
Approach Delay	62.5							8.6		8.6	34.1		
Approach LOS	E							A		A	C		
Queue Length 50th (ft)	-144	65	63	63		0		35		35	140		
Queue Length 95th (ft)	#398	#354	#194	#194		48		113		113	#377		
Internal Link Dist (ft)		582			310			264		264	636		
Turn Bay Length (ft)													
Base Capacity (vph)	292	654	277	277		355		1348		1348	873		
Starvation Cap Reductn	0	0	0	0		0		0		0	0		
Spillback Cap Reductn	0	0	0	0		0		0		0	0		
Storage Cap Reductn	0	0	0	0		0		0		0	0		
Reduced v/c Ratio	1.08	0.97	0.60	0.60		0.34		0.45		0.45	0.87		

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 70.4  
 Natural Cycle: 110  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 1.08  
 Intersection Signal Delay: 37.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 74.3%  
 ICU Level of Service D  
 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.

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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘	↗	↘	↗	↗	↗	↗	↗	↗	↗
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	E	C		C		B			C	
Approach Delay (s)		83.8				30.0		15.0			31.6	
Approach LOS		F				C		B			C	

Intersection Summary			
HCM 2000 Control Delay	46.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	74.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations							
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		25				
Satd. Flow (prot)	1723	0	0	1652	1610	0	
Flt Permitted	0.960						
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	13						
Link Speed (mph)				30	30		
Link Distance (ft)				417	331		
Travel Time (s)				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)	387	0	0	476	274	0	
Turn Type	Perm			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 Effect 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			B	B		
Approach Delay	38.8			16.9	11.7		
Approach LOS	D			B	B		
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			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**

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 79 (99%), Referenced to phase 1:NBSB, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Capacity Delay: 23.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 49.8%  
 ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖	↗	↖	↖	↖	↖
Volume (vph)	298	58	0	438	252	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)	324	63	0	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				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					
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			B	A	
Approach Delay (s)	35.5			13.7	9.5	
Approach LOS	D			B	A	











Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
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					
Intersection Capacity Utilization	45.8%		ICU Level of Service A			
Analysis Period (min)	15					

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	77	47	391	69	24	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)	84	51	425	75	26	311
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	0.93					
vC, conflicting volume	826	462		500		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	772	462		500		
tC, single (s)	6.7	6.6		4.5		
tC, 2 stage (s)						
tF (s)	3.8	3.6		2.5		
p0 queue free %	72	90		97		
cM capacity (veh/h)	296	535		902		
<b>Direction, Lane #</b>	<b>NW 1</b>	<b>NE 1</b>	<b>SW 1</b>			
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	C		A			
Approach Delay (s)	18.3	0.0	1.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			45.8%		ICU Level of Service	A
Analysis Period (min)			15			

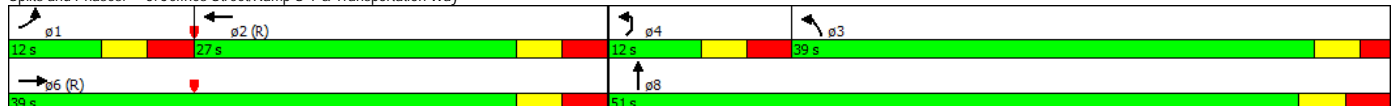


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↘	↕	↕		↘	↕		↘
Volume (vph)	63	525	277	86	527	923	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25				25			
Satd. Flow (prot)	1662	3505	3247	0	1728	3556	0	933
Flt Permitted	0.950				0.950			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		
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 (%)								
Lane Group Flow (vph)	68	571	394	0	573	1039	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								
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 (%)	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 Effect 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	D	C	C		D	C		E
Approach Delay		24.2	22.5			28.5		
Approach LOS		C	C			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	0	0	0		0	0		0
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

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 81 (90%), Referenced to phase 2:WBT and 6:EBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 27.1 Intersection LOS: C  
 Intersection Capacity Utilization 61.3% 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Jeffries Street/Ramp S-T & Transportation Way







Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations								
Volume (vph)	63	525	277	86	527	923	33	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	3245		1728	3556		933
Flt Permitted	0.95	1.00	1.00		0.95	1.00		0.95
Satd. Flow (perm)	1662	3505	3245		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	571	301	93	573	1003	36	42
RTOR Reduction (vph)	0	0	30	0	0	3	0	0
Lane Group Flow (vph)	68	571	364	0	573	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								
Actuated Green, G (s)	4.9	37.3	26.4		32.1	40.7		3.6
Effective Green, g (s)	6.9	39.3	28.4		34.1	42.7		5.6
Actuated g/C Ratio	0.08	0.44	0.32		0.38	0.47		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	1530	1023		654	1687		58
v/s Ratio Prot	c0.04	c0.16	0.11		c0.33	c0.29		0.05
v/s Ratio Perm								
v/c Ratio	0.54	0.37	0.36		0.88	0.61		0.72
Uniform Delay, d1	40.0	17.1	23.7		26.0	17.5		41.4
Progression Factor	0.71	1.27	0.99		1.01	1.01		1.00
Incremental Delay, d2	2.0	0.6	0.9		12.6	0.7		35.9
Delay (s)	30.3	22.3	24.5		38.9	18.5		77.3
Level of Service	C	C	C		D	B		E
Approach Delay (s)		23.2	24.5			25.7		
Approach LOS		C	C			C		
<b>Intersection Summary</b>								
HCM 2000 Control Delay			25.7			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.66					
Actuated Cycle Length (s)			90.0			Sum of lost time (s)		15.0
Intersection Capacity Utilization			61.3%			ICU Level of Service		B
Analysis Period (min)			15					
c Critical Lane Group								

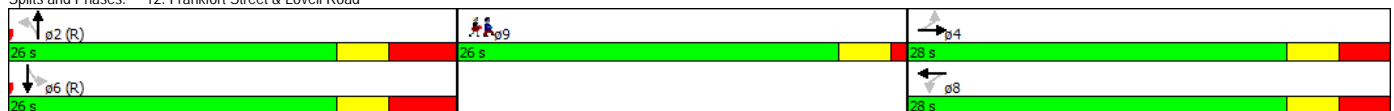


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations		↔			↔		↔	↔			↔		
Volume (vph)	0	0	61	93	0	78	128	269	20	30	101	46	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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					0.795		0.672				0.912		
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)		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	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													
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)		16.9			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		A			B		B	A			B		
Approach Delay		0.2			19.1			11.5			12.0		
Approach LOS		A			B			B			B		
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)													
Base Capacity (vph)		755			417		373	1072			755		
Starvation Cap Reductn		0			0		0	366			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

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.56  
 Intersection Signal Delay: 12.4 Intersection LOS: B  
 Intersection Capacity Utilization 55.9% 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.

Splits and Phases: 12: Frankfort Street & Lovell Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↕			↕	
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		B	A			B	
Approach Delay (s)		25.4			28.3			8.7			10.5	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.4									B
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			80.0						15.0			
Intersection Capacity Utilization			55.9%									B
Analysis Period (min)			15									

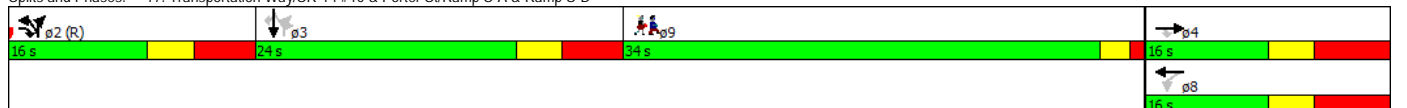
c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑	↑	
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 (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	1261	0	0	3042	1516	
Flt Permitted				0.950				0.998		
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					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 (%)										
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		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	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)	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?										
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effect Green (s)	17.8	50.4	17.8	26.6	47.6			16.0	14.0	
Actuated g/C Ratio	0.20	0.56	0.20	0.30	0.53			0.18	0.16	
v/c Ratio	0.66	0.37	0.03	0.63	0.39			0.63	0.63	
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	B	C	D	B			D	A	
Approach Delay	31.6		34.5					23.5		
Approach LOS	C		C					C		
Queue Length 50th (ft)	112	53	4	132	85			75	0	
Queue Length 95th (ft)	#254	231	19	m#327	m121			83	0	
Internal Link Dist (ft)	232		109					203		
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	0	0	0	0	0			0	0	
Reduced v/c Ratio	0.66	0.37	0.03	0.63	0.39			0.53	0.58	

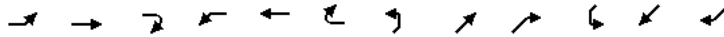
Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 12 (13%), Referenced to phase 2:NBL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.66  
 Intersection Signal Delay: 28.6 Intersection LOS: C  
 Intersection Capacity Utilization 52.9% ICU Level of Service A  
 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.

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



	→	↘	←	↙	↑	↗	↘	↓	↙
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑	↑
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%
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)	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	0.2
Delay (s)	34.5	16.0	29.1	30.6	25.9			35.0	11.2
Level of Service	C	B	C	C	C			D	B
Approach Delay (s)	26.7		29.1					23.5	
Approach LOS	C		C					C	
<b>Intersection Summary</b>									
HCM 2000 Control Delay			26.7			HCM 2000 Level of Service			C
HCM 2000 Volume to Capacity ratio			0.54						
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			19.0
Intersection Capacity Utilization			52.9%			ICU Level of Service			A
Analysis Period (min)			15						
c Critical Lane Group									

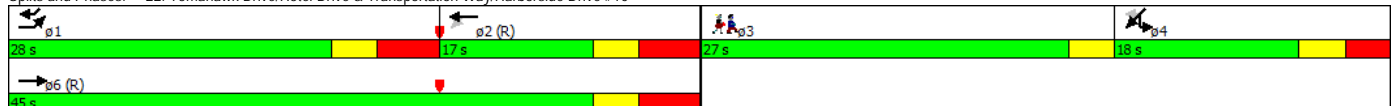


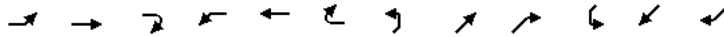
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3
Lane Configurations													
Volume (vph)	226	69	263	1	54	72	0	0	0	78	294	310	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			0%			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			25			25			25			
Satd. Flow (prot)	1770	3002	0	0	2775	0	0	0	0	0	3352	1583	
Flt Permitted	0.950				0.953						0.990		
Satd. Flow (perm)	1770	3002	0	0	2645	0	0	0	0	0	3352	1583	
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		*60			78								337
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 (%)													
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)	5.0	5.0			5.0						4.0	5.0	
Lead/Lag	Lead			Lag	Lag					Lag	Lag	Lead	Lead
Lead-Lag Optimize?										Yes	Yes		Yes
Recall Mode	None	C-Max		C-Max	C-Max					None	None	None	None
Act Effect Green (s)	18.4	55.4			32.0						14.8	37.2	
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	B			B						D	A	
Approach Delay		27.9			14.8						26.0		
Approach LOS		C			B						C		
Queue Length 50th (ft)	142	33			10						112	0	
Queue Length 95th (ft)	217	83			43						#183	45	
Internal Link Dist (ft)		350			939			442			395		
Turn Bay Length (ft)	250											150	
Base Capacity (vph)	452	1870			991						558	915	
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	0.54	0.19			0.14						0.73	0.37	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 25.7 Intersection LOS: C  
 Intersection Capacity Utilization 42.9% ICU Level of Service A  
 Analysis Period (min) 15  
 \* User Entered Value  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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, g (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	B			C						D	B
Approach Delay (s)		25.5			20.8			0.0			30.8	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM 2000 Control Delay	27.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

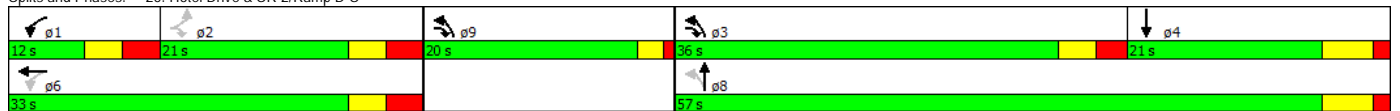


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø3	ø9
Lane Configurations	↖	→	↗	↖	↗	↗	↖	↖	↖	↖	↗	↗		
Volume (vph)	81	0	170	39	68	27	180	119	0	0	200	4		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12		
Grade (%)		0%				0%		0%			0%			
Storage Length (ft)	0		0	100		0	0		0	0		0		
Storage Lanes	1		1	1		0	1		0	0		0		
Taper Length (ft)	25			25			25			25				
Satd. Flow (prot)	1583	0	1417	1752	1405	0	1583	1667	0	0	1470	0		
Flt Permitted	0.690			0.950			0.435							
Satd. Flow (perm)	1150	0	1417	1752	1405	0	725	1667	0	0	1470	0		
Right Turn on Red			Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)			185		17						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)	88	0	185	42	103	0	196	129	0	0	221	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			
Total Lost Time (s)	5.0			5.0	5.0			4.5			4.5			
Lead/Lag	Lag			Lead							Lag		Lead	
Lead-Lag Optimize?														
Recall Mode	None			None	None		None				None		None	None
Act Effect Green (s)	10.4		27.5	16.7	16.7		34.0	31.2			17.5			
Actuated g/C Ratio	0.17		0.45	0.27	0.27		0.56	0.51			0.29			
v/c Ratio	0.45		0.25	0.09	0.26		0.34	0.15			0.52			
Control Delay	34.1		2.7	17.1	16.7		10.4	13.7			29.5			
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0			0.0			
Total Delay	34.1		2.7	17.1	16.7		10.4	13.7			29.5			
LOS	C		A	B	B		B	B			C			
Approach Delay					16.9			11.7			29.5			
Approach LOS					B			B			C			
Queue Length 50th (ft)	31		0	10	22		40	25			72			
Queue Length 95th (ft)	87		27	38	71		85	93			#227			
Internal Link Dist (ft)		264			921			636			177			
Turn Bay Length (ft)				100										
Base Capacity (vph)	321		739	480	695		946	1417			424			
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	0.27		0.25	0.09	0.15		0.21	0.09			0.52			

Intersection Summary

Area Type: Other  
 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 LOS: B  
 Intersection Capacity Utilization 42.7%  
 ICU Level of Service A  
 Analysis 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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		3 9	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	C		B	B	B		A	A			C	
Approach Delay (s)		18.3			17.1			9.3			21.4	
Approach LOS		B			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.8									B
HCM 2000 Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			65.5								22.0	
Intersection Capacity Utilization			42.7%									A
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations		↕	↕	↕		↕		↕			↕	↕	
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)													
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	136	550	87	0	63	0	331	0	0	444	0	
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA		
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	-2.0		
Total Lost Time (s)		4.0	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 Effect Green (s)	11.5	11.5	11.5	9.5		9.5		18.5		18.5	18.5		
Actuated g/C Ratio	0.22	0.22	0.22	0.18		0.18		0.36		0.36	0.36		
v/c Ratio	0.40	0.40	0.73	0.32		0.18		0.30		0.30	0.49		
Control Delay	28.1	10.1	10.1	28.5		1.9		8.2		8.2	17.8		
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0		
Total Delay	28.1	10.1	10.1	28.5		1.9		8.2		8.2	17.8		
LOS	C	C	B	C		A		A		A	B		
Approach Delay	13.7							8.2			17.8		
Approach LOS	B							A			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			310			264			636		
Turn Bay Length (ft)													
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  
 Actuated Cycle Length: 52.1  
 Natural Cycle: 60  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 14.0  
 Intersection LOS: B  
 Intersection Capacity Utilization 57.2%  
 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.

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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕	↕		↕		↕			↕	
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, g (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		B	B	C		B		B			B	
Approach Delay (s)		18.2			20.8			12.5			14.3	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	53.1	Sum of lost time (s)	14.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



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	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						
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red		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	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)	208	0	0	277	277	0	
Turn Type	Perm			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 Effect 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	A		
Approach Delay	37.0			8.9	6.6		
Approach LOS	D			A	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)							
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  
 Offset: 79 (99%), Referenced to phase 1:NBSB, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 15.7  
 Intersection Capacity Utilization 30.8%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

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





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	
Frt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1724			1652	1610	
Frt 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				0.17	c0.17	
v/s Ratio Perm	c0.11					
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			A	A	
Approach Delay (s)	33.2			6.8	4.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
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 Utilization	43.5%		ICU Level of Service A			
Analysis Period (min)	15					



Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	116	31	223	55	20	264
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)	126	34	242	60	22	287
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)						447
pX, platoon unblocked	0.95					
vC, conflicting volume	603	272		302		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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	C		A
Approach Delay (s)	16.0	0.0	0.8
Approach LOS	C		

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		43.5%	ICU Level of Service A
Analysis Period (min)		15	

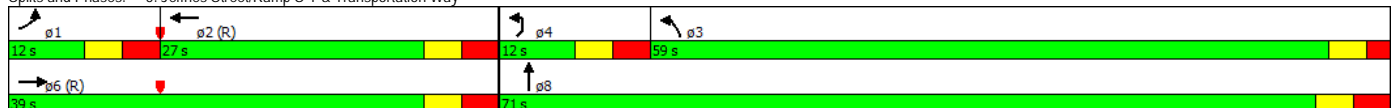


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↔	↕	↕	↔	↔	↕	↕	↔
Volume (vph)	102	759	295	142	830	1022	37	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25				25			
Satd. Flow (prot)	1662	3505	3163	0	1728	3556	0	933
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1662	3505	3163	0	1728	3556	0	933
Right Turn on Red				Yes			Yes	
Satd. Flow (RTOR)			66			6		
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 (%)								
Lane Group Flow (vph)	111	825	475	0	902	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								
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 Effect Green (s)	8.0	35.0	23.0		58.4	67.0		8.0
Actuated g/C Ratio	0.07	0.32	0.21		0.53	0.61		0.07
v/c Ratio	0.93	0.74	0.67		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	B		F
Approach Delay		50.3	41.5			31.1		
Approach LOS		D	D			C		
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:WBT and 6:EBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 38.3 Intersection LOS: D  
 Intersection Capacity Utilization 81.0% ICU Level of Service D  
 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

**Splits and Phases: 5: Jeffries Street/Ramp S-T & Transportation Way**







Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↶	↷	↷		↶	↷	↷	↶
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		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)	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		Prot	NA		Prot
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
Delay (s)	89.5	45.5	49.0		51.0	12.1		89.5
Level of Service	F	D	D		D	B		F
Approach Delay (s)		50.7	49.0			29.2		
Approach LOS		D	D			C		
<b>Intersection Summary</b>								
HCM 2000 Control Delay			38.3			HCM 2000 Level of Service		D
HCM 2000 Volume to Capacity ratio			0.93					
Actuated Cycle Length (s)			110.0			Sum of lost time (s)		15.0
Intersection Capacity Utilization			81.0%			ICU Level of Service		D
Analysis Period (min)			15					
c Critical Lane Group								

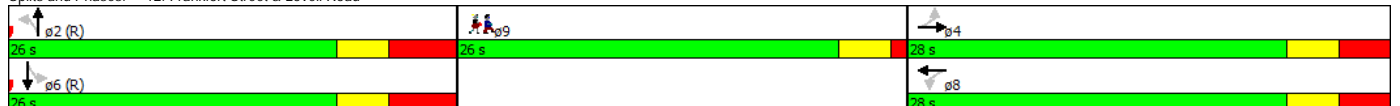


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations		↕			↕		↕	↕			↕		
Volume (vph)	0	0	129	59	0	51	252	450	34	20	64	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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					0.747		0.677				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			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 Effect 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		0.5			11.2		26.1	13.4			9.8		
LOS		A			B		C	B			A		
Approach Delay		0.5			11.2			17.7			9.8		
Approach LOS		A			B			B			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			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

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 14.2 Intersection LOS: B  
 Intersection Capacity Utilization 59.6% 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Frankfort Street & Lovell Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
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		C			C		C	B			A	
Approach Delay (s)		26.7			26.7			15.3			9.1	
Approach LOS		C			C			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.2				HCM 2000 Level of Service					B
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)				15.0	
Intersection Capacity Utilization			59.6%				ICU Level of Service					B
Analysis Period (min)			15									

c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑	↑	
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%		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	1280	0	0	2945	1516	
Flt Permitted				0.950				0.995		
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 (%)	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)	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										
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	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)	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?										
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effect 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	D	B	D	E	C			E	A	
Approach Delay	36.0		43.5					37.9		
Approach LOS	D		D					D		
Queue Length 50th (ft)	163	77	5	301	278			182	0	
Queue Length 95th (ft)	m#387	m239	22	m#403	m376			167	0	
Internal Link Dist (ft)	232		109					203		
Turn Bay Length (ft)		200		300						
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	

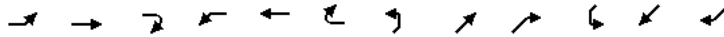
Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 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: 0.99  
 Intersection Signal Delay: 42.2 Intersection LOS: D  
 Intersection Capacity Utilization 75.1% ICU Level of Service D  
 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.

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



	→	↘	←	↙	↑	↗	↘	↓	↙
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↗	↔	↗	↗			↑↑	↗
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			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	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		Perm	NA	Perm
Protected Phases	4	2	8	2	2			3	
Permitted Phases		4			3		3		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	0.7
Delay (s)	39.2	20.1	32.3	88.5	33.8			63.3	0.7
Level of Service	D	C	C	F	C			E	A
Approach Delay (s)	32.0		32.3					35.1	
Approach LOS	C		C					D	
<b>Intersection Summary</b>									
HCM 2000 Control Delay			46.5			HCM 2000 Level of Service			D
HCM 2000 Volume to Capacity ratio			0.77						
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			19.0
Intersection Capacity Utilization			75.1%			ICU Level of Service			D
Analysis Period (min)			15						
c Critical Lane Group									

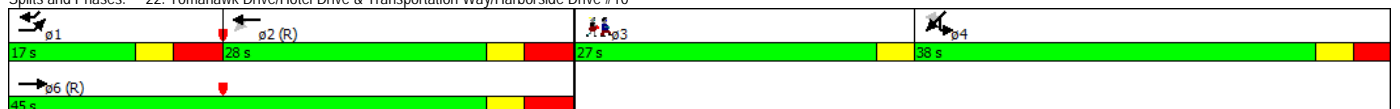


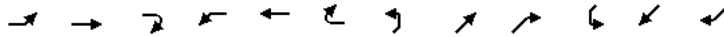
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3
Lane Configurations													
Volume (vph)	89	106	383	4	141	192	0	0	0	136	543	297	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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			25			25			25			
Satd. Flow (prot)	1770	3001	0	0	2771	0	0	0	0	0	3359	1583	
Flt Permitted	0.950				0.950						0.990		
Satd. Flow (perm)	1770	3001	0	0	2635	0	0	0	0	0	3359	1583	
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		*60			209								323
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 (%)													
Lane Group Flow (vph)	97	531	0	0	366	0	0	0	0	0	738	323	
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)	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?										Yes	Yes		Yes
Recall Mode	None	C-Max		C-Max	C-Max					None	None	None	None
Act Effect Green (s)	10.9	60.2			44.3					30.0	30.0	44.9	
Actuated g/C Ratio	0.10	0.55			0.40					0.27	0.27	0.41	
v/c Ratio	0.55	0.32			0.31					0.80	0.80	0.39	
Control Delay	64.0	23.4			13.5					44.4	44.4	3.4	
Queue Delay	0.0	0.0			0.0					0.0	0.0	0.0	
Total Delay	64.0	23.4			13.5					44.4	44.4	3.4	
LOS	E	C			B					D	D	A	
Approach Delay		29.7			13.5					32.0	32.0		
Approach LOS		C			B					C	C		
Queue Length 50th (ft)	70	97			31					254	254	0	
Queue Length 95th (ft)	m110	174			96					312	312	49	
Internal Link Dist (ft)		350			939			442		395	395		
Turn Bay Length (ft)	250											150	
Base Capacity (vph)	193	1668			1185					1038	1038	850	
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	0.50	0.32			0.31					0.71	0.71	0.38	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 28.0 Intersection LOS: C  
 Intersection Capacity Utilization 56.1% ICU Level of Service B  
 Analysis Period (min) 15  
 \* User Entered Value  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↔	↕	↔	↔	↕	↔					↕	↔
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	C			C						D	C
Approach Delay (s)		27.0			23.3			0.0			36.5	
Approach LOS		C			C			A			D	

Intersection Summary				
HCM 2000 Control Delay		31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio		0.48		
Actuated Cycle Length (s)		110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization		56.1%	ICU Level of Service	B
Analysis Period (min)		15		

c Critical Lane Group

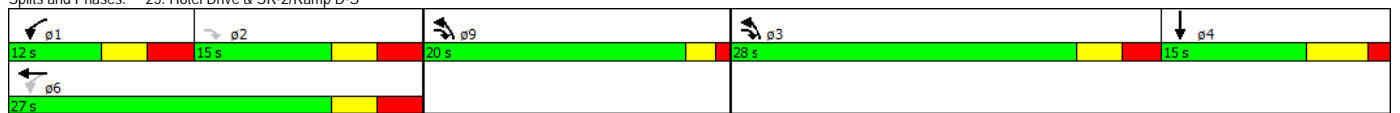


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9
Lane Configurations			↑↑	↑	↑		↑				↑				
Volume (vph)	0	0	246	184	153	0	389	0	0	0	151	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12			
Grade (%)		0%			0%			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					
Satd. Flow (prot)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0			
Flt Permitted				0.950			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)		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)	0	0	267	200	166	0	423	0	0	0	164	0			
Turn Type			pt+ov	pm+pt	NA		Prot				NA				
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)				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 Effect Green (s)			36.3	19.9	19.9		23.6				10.7				
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			A	C	C		C				D				
Approach Delay					25.4						50.0				
Approach LOS					C						D				
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			0	0	0		0				0				
Storage Cap Reductn			0	0	0		0				0				
Reduced v/c Ratio			0.18	0.39	0.37		0.68				0.71				

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 68.5  
 Natural Cycle: 75  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.78  
 Intersection Signal Delay: 24.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 51.3%  
 ICU Level of Service A  
 Analysis 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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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								
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			B	C	C		C				D	
Approach Delay (s)		11.2			21.0			27.7			38.9	
Approach LOS		B			C			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			23.6									C
HCM 2000 Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			70.6								22.0	
Intersection Capacity Utilization			51.3%									A
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations		↕	↕	↕		↕		↕			↕	↕	
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)													
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	315	653	167	0	122	0	378	0	0	632	0	
Turn Type	Split	NA	Prot	Prot		Prot	NA		Perm	NA			
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)	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)		-1.0	-1.0	-1.0		-1.0		-2.0		-2.0	-2.0		
Total Lost Time (s)		4.0	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?													
Recall Mode	None	None	None	None		None		Min		Min	Min		None
Act Effect Green (s)	19.0	19.0	19.0	11.7		11.7		25.3		25.3	25.3		
Actuated g/C Ratio	0.26	0.26	0.26	0.16		0.16		0.35		0.35	0.35		
v/c Ratio	0.76	0.86	0.86	0.69		0.38		0.33		0.81	0.81		
Control Delay	40.6	20.7	20.7	47.4		10.5		4.9		33.2	33.2		
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0		
Total Delay	40.6	20.7	20.7	47.4		10.5		4.9		33.2	33.2		
LOS	D		C	D		B		A		C	C		
Approach Delay	27.1							4.9		33.2	33.2		
Approach LOS	C							A		C	C		
Queue Length 50th (ft)		118	50	65		0		6		120	120		
Queue Length 95th (ft)		#341	#322	#206		49		44		#313	#313		
Internal Link Dist (ft)		582			310			264		636	636		
Turn Bay Length (ft)													
Base Capacity (vph)		418	761	251		333		1132		779	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		0.75	0.86	0.67		0.37		0.33		0.81	0.81		

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 71.7  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 25.7  
 Intersection LOS: C  
 Intersection Capacity Utilization 72.0%  
 ICU Level of Service C  
 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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘	↗		↗		↗		↗	↗	
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	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		Prot		NA		Perm	NA	
Protected Phases	4	4	4	3		3		1			1	
Permitted Phases										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				
v/s Ratio Perm											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	C	D		C		B			C	
Approach Delay (s)		31.9			32.4			16.8			29.6	
Approach LOS		C			C			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		28.8										
HCM 2000 Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		73.2						14.0				
Intersection Capacity Utilization		72.0%										
Analysis Period (min)		15										

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations							
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		25				
Satd. Flow (prot)	1723	0	0	1652	1610	0	
Flt Permitted	0.960						
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	13						
Link Speed (mph)				30	30		
Link Distance (ft)				417	331		
Travel Time (s)				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)	387	0	0	476	274	0	
Turn Type	Perm			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 Effect 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			B	B		
Approach Delay	38.8			16.9	11.7		
Approach LOS	D			B	B		
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			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**

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 79 (99%), Referenced to phase 1:NBSB, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Capacity Delay: 23.1 Intersection LOS: C  
 Intersection Capacity Utilization 49.8% ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	2	1	0	1	1	0
Volume (vph)	298	58	0	438	252	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)	324	63	0	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				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					
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			B	A	
Approach Delay (s)	35.5			13.7	9.5	
Approach LOS	D			B	A	











Intersection Summary			
HCM 2000 Control Delay	20.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
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
Intersection Capacity Utilization	45.8%
	ICU Level of Service A
Analysis Period (min)	15

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	77	47	391	69	24	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)	84	51	425	75	26	311
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	0.93					
vC, conflicting volume	826	462		500		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	772	462		500		
tC, single (s)	6.7	6.6		4.5		
tC, 2 stage (s)						
tF (s)	3.8	3.6		2.5		
p0 queue free %	72	90		97		
cM capacity (veh/h)	296	535		902		
<b>Direction, Lane #</b>	<b>NW 1</b>	<b>NE 1</b>	<b>SW 1</b>			
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	C		A			
Approach Delay (s)	18.3	0.0	1.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.9			
Intersection Capacity Utilization			45.8%		ICU Level of Service	A
Analysis Period (min)			15			

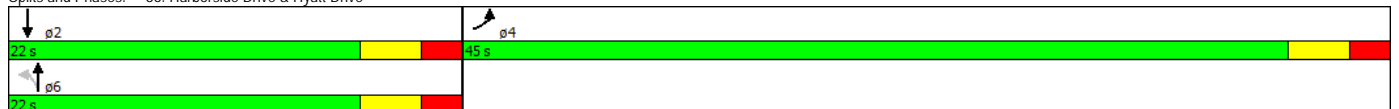


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↕		↔	
Volume (vph)	71	8	8	139	48	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	3403	0	0	3529	3274	0
Flt Permitted	0.957			0.932		
Satd. Flow (perm)	3403	0	0	3299	3274	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9				52	
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)						
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			6			
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)	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 Effect Green (s)	17.6			9.7	9.7	
Actuated g/C Ratio	0.76			0.42	0.42	
v/c Ratio	0.03			0.12	0.07	
Control Delay	4.2			6.5	4.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	4.2			6.5	4.5	
LOS	A			A	A	
Approach Delay	4.2			6.5	4.5	
Approach LOS	A			A	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)						
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  
 Actuated Cycle Length: 23.1  
 Natural Cycle: 40  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.12  
 Intersection Signal Delay: 5.4  
 Intersection Capacity Utilization 26.6%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A










Splits and Phases: 86: Harborside Drive & Hyatt Drive







Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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		
w/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	A	
Approach Delay (s)	5.3			4.7	4.6	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			4.8	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.13			
Actuated Cycle Length (s)			18.7	Sum of lost time (s)		8.0
Intersection Capacity Utilization			26.6%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	114	7	416	126	7	175
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	1805	0	0	3532
Flt Permitted	0.955					0.998
Satd. Flow (perm)	1765	0	1805	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	589	0	0	198
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.0%		ICU Level of Service A			
Analysis Period (min)	15					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	114	7	416	126	7	175
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)	124	8	452	137	8	190
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	0.94	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)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	70	99			99	
cM capacity (veh/h)	418	518			970	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
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	1	0		
Control Delay (s)	17.3	0.0	1.0	0.0		
Lane LOS	C		A			
Approach Delay (s)	17.3	0.0	0.4			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			43.0%		ICU Level of Service	A
Analysis Period (min)			15			

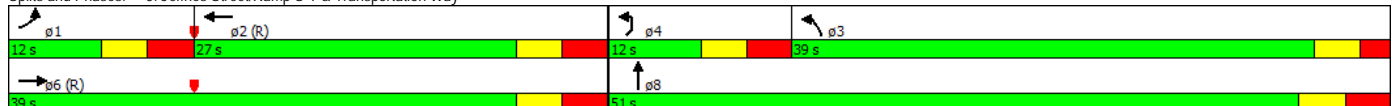


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↔	↕	↕		↔	↕		↔
Volume (vph)	63	623	172	86	618	923	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25				25			
Satd. Flow (prot)	1662	3505	3156	0	1728	3556	0	933
Flt Permitted	0.950				0.950			0.950
Satd. Flow (perm)	1662	3505	3156	0	1728	3556	0	933
Right Turn on Red				Yes			Yes	
Satd. Flow (RTOR)			93			6		
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 (%)								
Lane Group Flow (vph)	68	677	280	0	672	1039	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								
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 (%)	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 Effect Green (s)	8.1	38.4	28.7		37.4	43.6		8.0
Actuated g/C Ratio	0.09	0.43	0.32		0.42	0.48		0.09
v/c Ratio	0.46	0.45	0.26		0.94	0.60		0.51
Control Delay	46.7	29.8	18.2		48.7	18.1		62.3
Queue Delay	0.0	0.0	0.0		0.0	0.0		0.0
Total Delay	46.7	29.8	18.2		48.7	18.1		62.3
LOS	D	C	B		D	B		E
Approach Delay		31.4	18.2			30.1		
Approach LOS		C	B			C		
Queue Length 50th (ft)	41	197	44		362	193		23
Queue Length 95th (ft)	m72	208	83		#606	261		#68
Internal Link Dist (ft)		80	562			90		
Turn Bay Length (ft)	200							
Base Capacity (vph)	149	1497	1070		717	1859		82
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	0.46	0.45	0.26		0.94	0.56		0.51

**Intersection Summary**

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 29.8 Intersection LOS: C  
 Intersection Capacity Utilization 64.8% ICU Level of Service C  
 Analysis Period (min) 15  
 # 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: 5: Jeffries Street/Ramp S-T & Transportation Way**





Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations								
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	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)	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								
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	46.0		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	D	C	C		D	B		E
Approach Delay (s)		31.9	26.5			27.0		
Approach LOS		C	C			C		
<b>Intersection Summary</b>								
HCM 2000 Control Delay			29.0			HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio			0.75					
Actuated Cycle Length (s)			90.0			Sum of lost time (s)		15.0
Intersection Capacity Utilization			64.8%			ICU Level of Service		C
Analysis Period (min)			15					
c Critical Lane Group								

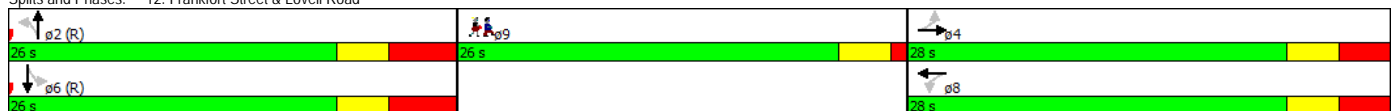


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations		↕			↕		↕	↕			↕		
Volume (vph)	0	0	61	93	0	78	128	269	20	30	101	46	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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					0.795		0.672				0.912		
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)		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	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													
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)		16.9			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		A			B		B	A			B		
Approach Delay		0.2			19.1			11.5			12.0		
Approach LOS		A			B			B			B		
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)													
Base Capacity (vph)		755			417		373	1072			755		
Starvation Cap Reductn		0			0		0	366			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

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.56  
 Intersection Signal Delay: 12.4 Intersection LOS: B  
 Intersection Capacity Utilization 55.9% 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.

Splits and Phases: 12: Frankfort Street & Lovell Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
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		B	A			B	
Approach Delay (s)		25.4			28.3			8.7			10.5	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.4									B
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			80.0						15.0			
Intersection Capacity Utilization			55.9%									B
Analysis Period (min)			15									

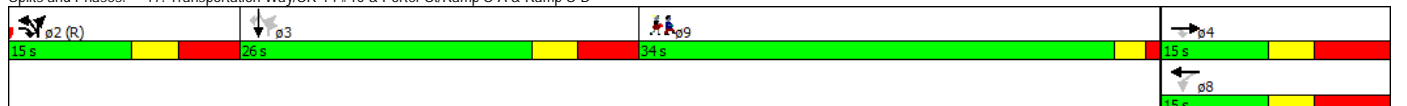
c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑	↑	
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)				25			25			
Satd. Flow (prot)	3282	1487	1776	3164	1278	0	0	2965	1516	
Flt Permitted				0.950				0.996		
Satd. Flow (perm)	3282	1487	1776	3164	1278	0	0	2965	1516	
Right Turn on Red		Yes				Yes			Yes	
Satd. Flow (RTOR)		*40			*95				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)										
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		Lead		Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Min	None	C-Min	C-Min		None	None	None	None
Act Effect Green (s)	21.0	53.3	21.0	26.3	51.2			19.9	17.9	
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	0.46			0.72	0.61	
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	
LOS	D	B	C	C	A			D	A	
Approach Delay	26.9		32.1					23.8		
Approach LOS	C		C					C		
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		109					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

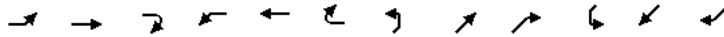
Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 23.1 Intersection LOS: C  
 Intersection Capacity Utilization 56.4% ICU Level of Service B  
 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.

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





	→	↘	←	↙	↑	↗	↘	↓	↙
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↗	↔	↗	↗			↗	↗
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
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, g (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				
v/s Ratio Perm		0.09			0.12			0.16	0.05
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	C	B	C	C	B			C	A
Approach Delay (s)	23.6		26.6					22.1	
Approach LOS	C		C					C	
<b>Intersection Summary</b>									
HCM 2000 Control Delay			21.3						C
HCM 2000 Volume to Capacity ratio			0.60						
Actuated Cycle Length (s)			90.0						19.0
Intersection Capacity Utilization			56.4%						B
Analysis Period (min)			15						
c Critical Lane Group									

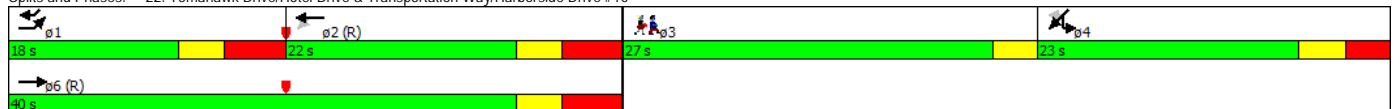


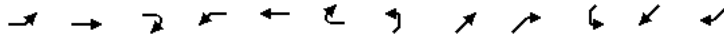
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3
Lane Configurations	↖	↗			↖						↗	↖	
Volume (vph)	88	81	292	1	54	72	0	0	0	72	274	205	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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			25			25			25			
Satd. Flow (prot)	1770	3004	0	0	2775	0	0	0	0	0	3354	1583	
Flt Permitted	0.950				0.953						0.990		
Satd. Flow (perm)	1770	3004	0	0	2645	0	0	0	0	0	3354	1583	
Right Turn on Red			Yes			Yes			Yes				Yes
Satd. Flow (RTOR)		*60			78								223
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 (%)													
Lane Group Flow (vph)	96	405	0	0	138	0	0	0	0	0	376	223	
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)	18.0	40.0		22.0	22.0					23.0	23.0	18.0	27.0
Total Split (%)	20.0%	44.4%		24.4%	24.4%					25.6%	25.6%	20.0%	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)	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 Effect Green (s)	10.9	54.1			38.2						16.1	31.0	
Actuated g/C Ratio	0.12	0.60			0.42						0.18	0.34	
v/c Ratio	0.45	0.22			0.12						0.63	0.32	
Control Delay	46.5	19.0			12.7						38.9	3.9	
Queue Delay	0.0	0.0			0.0						0.0	0.0	
Total Delay	46.5	19.0			12.7						38.9	3.9	
LOS	D	B			B						D	A	
Approach Delay		24.2			12.7						25.9		
Approach LOS		C			B						C		
Queue Length 50th (ft)	56	71			7						104	0	
Queue Length 95th (ft)	m107	126			40						146	42	
Internal Link Dist (ft)		350			939			442			395		
Turn Bay Length (ft)	250											150	
Base Capacity (vph)	255	1830			1167						708	722	
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	0.38	0.22			0.12						0.53	0.31	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green, Master Intersection  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.63  
 Intersection Signal Delay: 23.7 Intersection LOS: C  
 Intersection Capacity Utilization 41.3% ICU Level of Service A  
 Analysis Period (min) 15  
 \* User Entered Value  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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		Perm	NA					Split	NA	pm+ov
Protected Phases	1	6			2					4	4	1
Permitted Phases				2								4
Actuated Green, G (s)	8.9	50.3			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									c0.11	0.02
v/s Ratio Perm					0.03							0.03
v/c Ratio	0.45	0.22			0.09						0.63	0.14
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	B			B						D	C
Approach Delay (s)		21.3			16.7			0.0			31.0	
Approach LOS		C			B			A			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay		25.5			HCM 2000 Level of Service			C				
HCM 2000 Volume to Capacity ratio		0.32										
Actuated Cycle Length (s)		90.0			Sum of lost time (s)			17.0				
Intersection Capacity Utilization		41.3%			ICU Level of Service			A				
Analysis Period (min)		15										

c Critical Lane Group

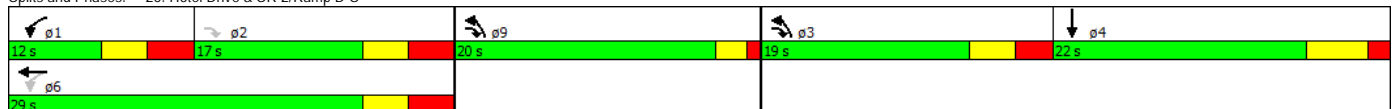


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9
Lane Configurations			↑↑	↑	↑		↑				↑				
Volume (vph)	0	0	210	41	68	0	180	0	0	0	92	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12			
Grade (%)		0%			0%			0%			0%				
Storage Length (ft)	0		0	100		0	0		0	0		0			
Storage Lanes	0		2	1		0	1		0	0		0			
Taper Length (ft)	25			25			25			25					
Satd. Flow (prot)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0			
Flt Permitted				0.950			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)			1141												
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)	0	0	228	45	74	0	196	0	0	0	100	0			
Turn Type			pt+ov	pm+pt	NA		Prot				NA				
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)				12.0	29.0						22.0		17.0	19.0	20.0
Total Split (%)				13.3%	32.2%						24.4%		19%	21%	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 Effect Green (s)			26.8	13.4	13.4		15.2				16.2				
Actuated g/C Ratio			0.62	0.31	0.31		0.35				0.37				
v/c Ratio			0.12	0.08	0.18		0.35				0.18				
Control Delay			0.1	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			A	B	B		B				C				
Approach Delay					18.3						21.2				
Approach LOS					B						C				
Queue Length 50th (ft)			0	10	17		42				21				
Queue Length 95th (ft)			0	40	60		115				84				
Internal Link Dist (ft)		264			921			636			177				
Turn Bay Length (ft)				100											
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

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 43.4  
 Natural Cycle: 75  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.35  
 Intersection Signal Delay: 12.1  
 Intersection Capacity Utilization 32.3%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 25: Hotel Drive & SR-2/Ramp D-S



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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
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	196	0	0	0	100	0
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
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)			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								
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			A	B	B		B				C	
Approach Delay (s)		9.6			12.6			15.6			20.7	
Approach LOS		A			B			B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			13.7									B
HCM 2000 Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			47.1								22.0	
Intersection Capacity Utilization			32.3%									A
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations		↕	↕	↕		↕		↕			↕	↕	
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	
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	2588	0	0	3070	0	
Flt Permitted		0.960		0.950							0.784		
Satd. Flow (perm)	0	1555	1468	1480	0	1369	0	2588	0	0	2446	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			552			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)													
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	136	552	87	0	63	0	202	0	0	373	0	
Turn Type	Split	NA	Prot	Prot		Prot		NA		Perm	NA		
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	-2.0		
Total Lost Time (s)		4.0	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 Effect Green (s)	11.4	11.4	11.4	9.4		9.4		16.7		16.7	16.7		
Actuated g/C Ratio	0.23	0.23	0.23	0.19		0.19		0.33		0.33	0.33		
v/c Ratio	0.39	0.39	0.73	0.31		0.18		0.21		0.21	0.46		
Control Delay		26.8	9.9	27.3		1.8		5.0		18.0	18.0		
Queue Delay		0.0	0.0	0.0		0.0		0.0		0.0	0.0		
Total Delay		26.8	9.9	27.3		1.8		5.0		18.0	18.0		
LOS		C	A	C		A		A		B	B		
Approach Delay		13.2						5.0		18.0	18.0		
Approach LOS		B						A		B	B		
Queue Length 50th (ft)		30	0	20		0		2		38	38		
Queue Length 95th (ft)		#132	#152	90		5		28		130	130		
Internal Link Dist (ft)		582			310			264		636	636		
Turn Bay Length (ft)													
Base Capacity (vph)		471	829	449		499		1744		1589	1589		
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		0.29	0.67	0.19		0.13		0.12		0.23	0.23		

Intersection Summary

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 LOS: B  
 Intersection Capacity Utilization 55.5%  
 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.

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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗	↘	↘		↗		↕			↕	
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, g (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		B	B	C		B		B			B	
Approach Delay (s)		17.3				19.8		12.3			14.4	
Approach LOS		B				B		B			B	

Intersection Summary			
HCM 2000 Control Delay	16.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	51.2	Sum of lost time (s)	14.0
Intersection Capacity Utilization	55.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



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	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						
Satd. Flow (perm)	1723	0	0	1652	1610	0	
Right Turn on Red		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	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)	208	0	0	277	277	0	
Turn Type	Prot			NA	NA		
Protected Phases	3			1	1		2
Permitted Phases							
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 Effect 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	A		
Approach Delay	37.0			8.9	6.6		
Approach LOS	D			A	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)							
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  
 Offset: 79 (99%), Referenced to phase 1:NBSB, Start of Green  
 Natural Cycle: 55  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 15.7  
 Intersection Capacity Utilization 30.8%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

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







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	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	C			A	A	
Approach Delay (s)	33.2			6.8	4.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	11.0
Intersection Capacity Utilization	30.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
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 Utilization	43.5%
	ICU Level of Service A
Analysis Period (min)	15



Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	116	31	223	55	20	264
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)	126	34	242	60	22	287
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)						447
pX, platoon unblocked	0.95					
vC, conflicting volume	603	272		302		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
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	C		A
Approach Delay (s)	16.0	0.0	0.8
Approach LOS	C		

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization		43.5%	ICU Level of Service A
Analysis Period (min)		15	

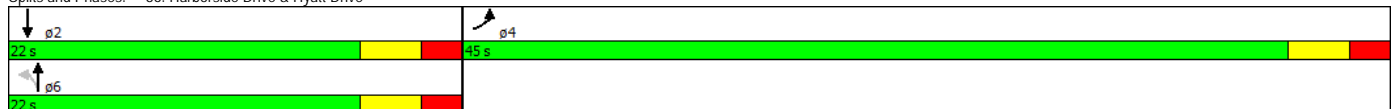


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT			↑↑	↑↑	
Volume (vph)	56	7	1	61	37	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	3403	0	0	3536	3274	0
Flt Permitted	0.958			0.949		
Satd. Flow (perm)	3403	0	0	3359	3274	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	8				40	
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)						
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			
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)	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 Effect 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	A			A	A	
Approach Delay	3.3			4.6	3.2	
Approach LOS	A			A	A	
Queue Length 50th (ft)	0			0	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	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.02			0.02	0.03	

**Intersection Summary**










Area Type: Other  
 Cycle Length: 67  
 Actuated Cycle Length: 20.8  
 Natural Cycle: 40  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.06  
 Intersection Signal Delay: 3.7  
 Intersection Capacity Utilization 24.2%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A










Splits and Phases: 86: Harborside Drive & Hyatt Drive





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT			TT	TT	
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		
w/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	A			A	A	
Approach Delay (s)	5.3			3.9	3.8	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
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						
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
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.1%		ICU Level of Service A			
Analysis Period (min)	15					

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	124	7	123	125	7	127
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)	135	8	134	136	8	138
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						
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	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
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	0	0		
Control Delay (s)	11.7	0.0	1.1	0.0		
Lane LOS	B		A			
Approach Delay (s)	11.7	0.0	0.4			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			28.1%		ICU Level of Service	A
Analysis Period (min)			15			

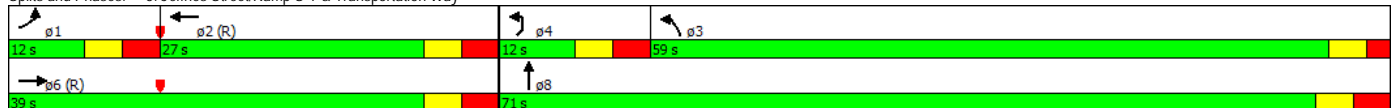


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↔	↕	↕	↔	↔	↕	↕	↔
Volume (vph)	102	762	322	142	800	1022	37	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25				25			
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	1728	3556	0	933
Right Turn on Red				Yes			Yes	
Satd. Flow (RTOR)			57			6		
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 (%)								
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								
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 Effect 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	0.0	0.0		0.0	0.0		0.0
Total Delay	79.0	42.0	40.4		53.3	14.4		88.2
LOS	E	D	D		D	B		F
Approach Delay		46.4	40.4			31.1		
Approach LOS		D	D			C		
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)		80	562			90		
Turn Bay Length (ft)	200							
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**

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.98  
 Intersection Signal Delay: 37.2 Intersection LOS: D  
 Intersection Capacity Utilization 80.1% ICU Level of Service D  
 Analysis Period (min) 15  
 # 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: 5: Jeffries Street/Ramp S-T & Transportation Way**







Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↘	↗	↗		↘	↗		↘
Volume (vph)	102	762	322	142	800	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		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)	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%
Turn Type	Prot	NA	NA		Prot	NA		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								
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
Progression Factor	0.91	1.22	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	B		F
Approach Delay (s)		45.6	46.0			29.7		
Approach LOS		D	D			C		
<b>Intersection Summary</b>								
HCM 2000 Control Delay			37.0		HCM 2000 Level of Service			D
HCM 2000 Volume to Capacity ratio			0.91					
Actuated Cycle Length (s)			110.0		Sum of lost time (s)			15.0
Intersection Capacity Utilization			80.1%		ICU Level of Service			D
Analysis Period (min)			15					
c Critical Lane Group								

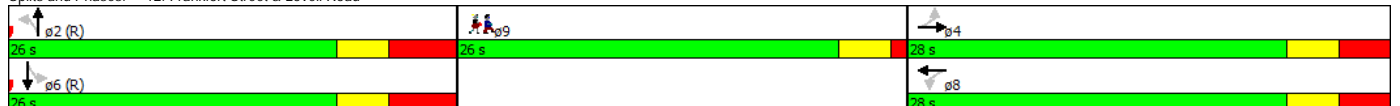


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations		↔			↔		↔	↔			↔		
Volume (vph)	0	0	129	59	0	51	253	451	34	20	65	29	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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 Effect 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		A			B		C	B			A		
Approach Delay		0.5			11.2			17.7			9.8		
Approach LOS		A			B			B			A		
Queue Length 50th (ft)		0			4		73	115			17		
Queue Length 95th (ft)		0			47		m#312	#400			79		
Internal Link Dist (ft)		1			563			251			362		
Turn Bay Length (ft)													
Base Capacity (vph)		801			396		383	1093			751		
Starvation Cap Reductn		0			0		0	242			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  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.72  
 Intersection Signal Delay: 14.2 Intersection LOS: B  
 Intersection Capacity Utilization 59.6% 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.  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 12: Frankfort Street & Lovell Road





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↔	↔			↔	
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		C			C		C	B			A	
Approach Delay (s)		26.7			26.7			15.4			9.2	
Approach LOS		C			C			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			17.2									B
HCM 2000 Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			80.0						15.0			
Intersection Capacity Utilization			59.6%									B
Analysis Period (min)			15									

c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑↑	↑	↔	↔	↔			↑↑	↑	
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 (%)										
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										
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
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0			-2.0	0.0	
Total Lost Time (s)	5.0	5.0	6.0	5.0	5.0			5.0	7.0	
Lead/Lag		Lead		Lead	Lead		Lag	Lag	Lag	
Lead-Lag Optimize?										
Recall Mode	None	C-Min	None	C-Min	C-Min		Min	Min	Min	None
Act Effect 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	B	D	E	C			E	A	
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	

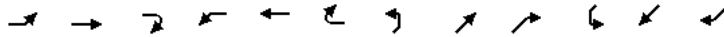
Intersection Summary

Area Type: Other  
 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 LOS: D  
 Intersection Capacity Utilization 73.9% ICU Level of Service D  
 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.

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



	→	↘	←	↙	↑	↗	↘	↓	↙
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↗	↔	↗	↗			↗	↗
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	49	0	0	0	435
Lane Group Flow (vph)	508	284	9	787	481	0	0	716	128
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)	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	B	C	F	C			E	A
Approach Delay (s)	31.5		32.6					41.7	
Approach LOS	C		C					D	
<b>Intersection Summary</b>									
HCM 2000 Control Delay			47.3			HCM 2000 Level of Service			D
HCM 2000 Volume to Capacity ratio			0.79						
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			19.0
Intersection Capacity Utilization			73.9%			ICU Level of Service			D
Analysis Period (min)			15						
c Critical Lane Group									

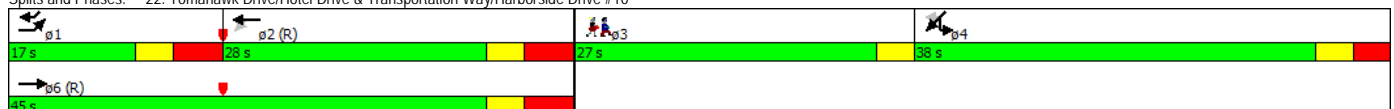


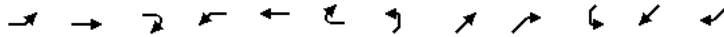
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3
Lane Configurations													
Volume (vph)	62	106	377	4	141	192	0	0	0	136	548	324	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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			25			25			25			
Satd. Flow (prot)	1770	3003	0	0	2771	0	0	0	0	0	3360	1583	
Flt Permitted	0.950				0.950						0.990		
Satd. Flow (perm)	1770	3003	0	0	2635	0	0	0	0	0	3360	1583	
Right Turn on Red			Yes			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 (%)													
Lane Group Flow (vph)	67	525	0	0	366	0	0	0	0	0	744	352	
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)	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 Effect 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	C			B						D	A	
Approach Delay		27.2			13.4						31.3		
Approach LOS		C			B						C		
Queue Length 50th (ft)	49	98			30						255	0	
Queue Length 95th (ft)	m81	172			96						314	51	
Internal Link Dist (ft)		350			939			442			395		
Turn Bay Length (ft)	250											150	
Base Capacity (vph)	193	1665			1195						1038	868	
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	0.35	0.32			0.31						0.72	0.41	

Intersection Summary

Area Type: Other  
 Cycle Length: 110  
 Actuated Cycle Length: 110  
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 80  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 26.9 Intersection LOS: C  
 Intersection Capacity Utilization 56.1% ICU Level of Service B  
 Analysis Period (min) 15  
 \* User Entered Value  
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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	C			C						D	C
Approach Delay (s)		25.3			23.0			0.0			36.3	
Approach LOS		C			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	56.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

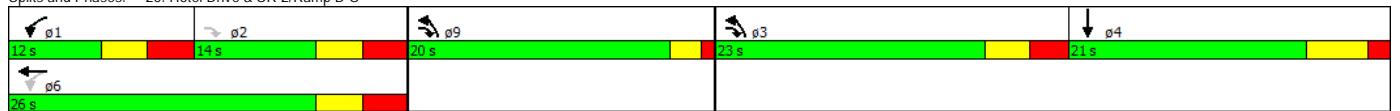


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9
Lane Configurations			↗	↖	↗	↖	↗	↖			↗				
Volume (vph)	0	0	258	183	153	0	407	0	0	0	161	0			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12			
Grade (%)		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					
Satd. Flow (prot)	0	0	2493	1752	1357	0	1583	0	0	0	1473	0			
Flt Permitted				0.950			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)			578												
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)	0	0	280	199	166	0	442	0	0	0	175	0			
Turn Type			pt+ov	pm+pt	NA		Prot				NA				
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)				12.0	26.0						21.0		14.0	23.0	20.0
Total Split (%)				13.3%	28.9%						23.3%		16%	26%	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 Effect Green (s)			33.8	19.7	19.7		21.2				13.4				
Actuated g/C Ratio			0.49	0.29	0.29		0.31				0.20				
v/c Ratio			0.18	0.40	0.43		0.90				0.61				
Control Delay			0.3	25.0	26.7		46.8				37.2				
Queue Delay			0.0	0.0	0.0		0.0				0.0				
Total Delay			0.3	25.0	26.7		46.8				37.2				
LOS			A	C	C		D				D				
Approach Delay					25.8						37.2				
Approach LOS					C						D				
Queue Length 50th (ft)			0	62	52		171				63				
Queue Length 95th (ft)			0	165	147		301				#176				
Internal Link Dist (ft)		264			921			636			177				
Turn Bay Length (ft)				100											
Base Capacity (vph)			1459	503	424		506				361				
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			0.19	0.40	0.39		0.87				0.48				

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 68.6  
 Natural Cycle: 75  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 29.1  
 Intersection LOS: C  
 Intersection Capacity Utilization: 52.4%  
 ICU Level of Service A  
 Analysis 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





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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			B	C	C		D				C	
Approach Delay (s)		12.8			21.1			44.6			29.6	
Approach LOS		B			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			28.7									C
HCM 2000 Volume to Capacity ratio			0.75									
Actuated Cycle Length (s)			70.8								22.0	
Intersection Capacity Utilization			52.4%									A
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations		↕	↕	↕		↕		↕			↕	↕	
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	
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	2595	0	0	3068	0	
Flt Permitted		0.960		0.950							0.705		
Satd. Flow (perm)	0	1555	1468	1480	0	1369	0	2595	0	0	2196	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)			497			134		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)													
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	322	653	167	0	134	0	378	0	0	655	0	
Turn Type	Split	NA	Prot	Prot		Prot	NA		Perm	NA			
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)	23.0	23.0	23.0	15.0		15.0		30.0		30.0	30.0		22.0
Total Split (%)	25.6%	25.6%	25.6%	16.7%		16.7%		33.3%		33.3%	33.3%		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)		-1.0	-1.0	-1.0		-1.0		-2.0		-2.0	-2.0		
Total Lost Time (s)		4.0	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 Effect Green (s)	19.2	19.2	19.2	11.1		11.1		26.3		26.3	26.3		
Actuated g/C Ratio	0.27	0.27	0.27	0.15		0.15		0.36		0.36	0.36		
v/c Ratio	0.78	0.78	0.86	0.74		0.41		0.33		0.33	0.82		
Control Delay	41.8	21.1	52.4	10.9		10.9		4.7		4.7	33.1		
Queue Delay	0.0	0.0	0.0	0.0		0.0		0.0		0.0	0.0		
Total Delay	41.8	21.1	52.4	10.9		10.9		4.7		4.7	33.1		
LOS	D	C	D	B		B		A		A	C		
Approach Delay	27.9							4.7			33.1		
Approach LOS	C							A			C		
Queue Length 50th (ft)		121	52	67		0		5			123		
Queue Length 95th (ft)		#351	#327	#216		52		43			#322		
Internal Link Dist (ft)		582			310			264			636		
Turn Bay Length (ft)													
Base Capacity (vph)		413	755	227		323		1155			798		
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		0.78	0.86	0.74		0.41		0.33			0.82		

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 72.4  
 Natural Cycle: 90  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 26.4  
 Intersection LOS: C  
 Intersection Capacity Utilization: 72.6%  
 ICU Level of Service: C  
 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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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	C	D		C		B			C	
Approach Delay (s)		33.1				35.4		16.4			29.6	
Approach LOS		C				D		B			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			29.7			HCM 2000 Level of Service					C	
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			73.8			Sum of lost time (s)			14.0			
Intersection Capacity Utilization			72.6%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	ø2
Lane Configurations							
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%		
Storage Length (ft)	0	0	0			0	
Storage Lanes	1	0	0			0	
Taper Length (ft)	25		25				
Satd. Flow (prot)	1722	0	0	1652	1610	0	
Flt Permitted	0.960						
Satd. Flow (perm)	1722	0	0	1652	1610	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)	14						
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							
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 Effect 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			B	B		
Approach Delay	39.0			17.0	11.8		
Approach LOS	D			B	B		
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)							
Base Capacity (vph)	573			949	926		
Starvation Cap Reductn	0			0	253		
Spillback Cap Reductn	19			21	0		
Storage Cap Reductn	0			0	0		
Reduced v/c Ratio	0.71			0.52	0.41		

**Intersection Summary**

Area Type: Other  
 Cycle Length: 80  
 Actuated Cycle Length: 80  
 Offset: 79 (99%), Referenced to phase 1:NBSB, Start of Green  
 Natural Cycle: 65  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.80  
 Intersection Capacity Delay: 23.3      Intersection LOS: C  
 Intersection Capacity Utilization 50.2%      ICU Level of Service A  
 Analysis Period (min) 15  
 # 95th percentile volume exceeds capacity, queue may be longer.  
 Queue shown is maximum after two cycles.

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













Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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	
FIt Protected	0.96			1.00	1.00	
Satd. Flow (prot)	1722			1652	1610	
FIt 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			B	A	
Approach Delay (s)	35.7			13.9	9.5	
Approach LOS	D			B	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		20.3		HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio		0.60				
Actuated Cycle Length (s)		80.0		Sum of lost time (s)		12.0
Intersection Capacity Utilization		50.2%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group



Lane Group	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
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
Intersection Capacity Utilization	52.6%
	ICU Level of Service A
Analysis Period (min)	15

						
Movement	NWL	NWR	NET	NER	SWL	SWT
Lane Configurations						
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			None			None
Median storage (veh)						
Upstream signal (ft)						417
pX, platoon unblocked	0.93					
vC, conflicting volume	848	472			520	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	796	472			520	
tC, single (s)	6.7	6.6			4.5	
tC, 2 stage (s)						
tF (s)	3.8	3.6			2.5	
p0 queue free %	59	90			96	
cM capacity (veh/h)	283	528			886	
<b>Direction, Lane #</b>						
	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	C		A			
Approach Delay (s)	21.9	0.0	1.3			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			4.0			
Intersection Capacity Utilization			52.6%	ICU Level of Service	A	
Analysis Period (min)			15			

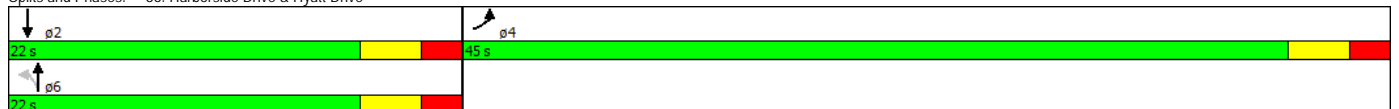


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↔		↕		↔	
Volume (vph)	71	8	8	139	48	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%			0%	0%	
Storage Length (ft)	0	0	0			0
Storage Lanes	2	0	0			0
Taper Length (ft)	25		25			
Satd. Flow (prot)	3403	0	0	3529	3274	0
Flt Permitted	0.957			0.932		
Satd. Flow (perm)	3403	0	0	3299	3274	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	9				52	
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)						
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			6			
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)	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 Effect Green (s)	17.6			9.7	9.7	
Actuated g/C Ratio	0.76			0.42	0.42	
v/c Ratio	0.03			0.12	0.07	
Control Delay	4.2			6.5	4.5	
Queue Delay	0.0			0.0	0.0	
Total Delay	4.2			6.5	4.5	
LOS	A			A	A	
Approach Delay	4.2			6.5	4.5	
Approach LOS	A			A	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)						
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  
 Actuated Cycle Length: 23.1  
 Natural Cycle: 40  
 Control Type: Actuated-Uncoordinated  
 Maximum v/c Ratio: 0.12  
 Intersection Signal Delay: 5.4  
 Intersection Capacity Utilization 26.6%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service A










Splits and Phases: 86: Harborside Drive & Hyatt Drive
















Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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		
w/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	A	
Approach Delay (s)	5.3			4.7	4.6	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			4.8	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.13			
Actuated Cycle Length (s)			18.7	Sum of lost time (s)		8.0
Intersection Capacity Utilization			26.6%	ICU Level of Service		A
Analysis Period (min)			15			
c Critical Lane Group						

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
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
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	43.9%		ICU Level of Service A			
Analysis Period (min)	15					

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	114	7	434	126	7	199
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)	124	8	472	137	8	216
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	0.94	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	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
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		A			
Approach Delay (s)	18.2	0.0	0.3			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.6			
Intersection Capacity Utilization			43.9%		ICU Level of Service	A
Analysis Period (min)			15			

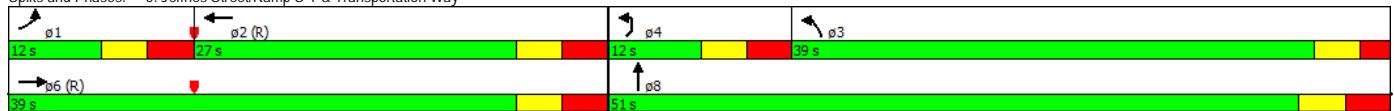


Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2
Lane Configurations	↖	↗	↖	↗	↖	↗	↖	↖
Volume (vph)	63	629	190	86	606	923	33	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	11	12	12	13
Grade (%)		0%	0%			0%		
Storage Length (ft)	200			0	0		0	
Storage Lanes	1			0	1		0	
Taper Length (ft)	25				25			
Right Turn on Red				Yes			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 (%)								
Lane Group Flow (vph)	68	684	300	0	659	1039	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								
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 (%)	13.3%	43.3%	30.0%		43.3%	56.7%		13.3%
Maximum Green (s)	6.0	33.0	21.0		34.0	45.0		6.0
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?								
Vehicle Extension (s)	2.0	2.0	2.0		3.0	3.0		3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0		3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0		0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0		0.0
Recall Mode	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)			5			5		
Act Effct Green (s)	8.1	39.1	29.4		36.7	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	D	C	B		D	B		E
Approach Delay		30.6	19.9			30.3		
Approach LOS		C	B			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							
Base Capacity (vph)	149	1522	1087		707	1859		82
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	0.46	0.45	0.28		0.93	0.56		0.51

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:WBT and 6:EBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 29.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 64.3%  
 ICU Level of Service C  
 Analysis Period (min) 15  
 # 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: 5: Jeffries Street/Ramp S-T & Transportation Way



\\hvb\proj\Wat-EV\13220.00\tech5 Traffic\tech\SYNCHRO\2030 Build SUN\_with garage.syn  
 VHB\elt

Lanes, Volumes, Timings  
 3/24/2016



Movement	EBL	EBT	WBT	WBR	NBL	NBT	NBR	NEL2	
Lane Configurations	↶	↷	↷		↶	↷	↷	↶	
Volume (vph)	63	629	190	86	606	923	33	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)	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									
Actuated Green, G (s)	4.9	34.7	23.8		34.7	43.3		3.6	
Effective Green, g (s)	6.9	36.7	25.8		36.7	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	B		E	
Approach Delay (s)		30.9	26.2			27.5			
Approach LOS		C	C			C			
<b>Intersection Summary</b>									
HCM 2000 Control Delay			29.0					HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.75						
Actuated Cycle Length (s)			90.0					Sum of lost time (s)	15.0
Intersection Capacity Utilization			64.3%					ICU Level of Service	C
Analysis Period (min)			15						
c Critical Lane Group									

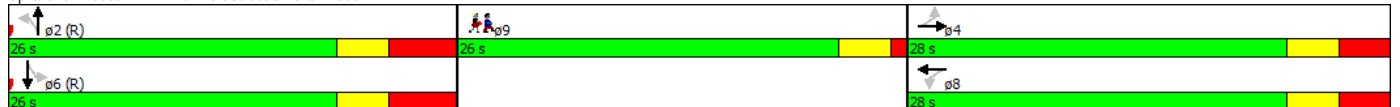


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø9
Lane Configurations		↔			↔		↔	↔			↔		
Volume (vph)	0	0	61	93	0	78	129	271	20	30	102	46	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			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			Yes			Yes			Yes			Yes	
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	66	0	0	186	0	140	317	0	0	194	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%
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)	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		C-Max	C-Max		C-Max	C-Max		None
Walk Time (s)													5.0
Flash Dont Walk (s)													17.0
Pedestrian Calls (#/hr)													10
Act Effect 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		A			B		B	A			B		
Approach Delay		0.2			19.1			11.5			12.1		
Approach LOS		A			B			B			B		
Queue Length 50th (ft)		0			33		36	78			29		
Queue Length 95th (ft)		0			90		#168	143			137		
Internal Link Dist (ft)		1			563			251			362		
Turn Bay Length (ft)													
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  
 Actuated Cycle Length: 80  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green, Master Intersection  
 Natural Cycle: 75  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.56  
 Intersection Signal Delay: 12.4 Intersection LOS: B  
 Intersection Capacity Utilization 56.1% 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.

Splits and Phases: 12: Frankfort Street & Lovell Road



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
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		C			C		B	A			B	
Approach Delay (s)		25.4			28.3			8.7			10.6	
Approach LOS		C			C			A			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			14.4									B
HCM 2000 Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			80.0						15.0			
Intersection Capacity Utilization			56.1%									B
Analysis Period (min)			15									

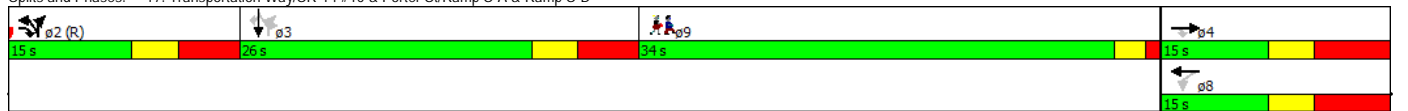
c Critical Lane Group

Lane Group	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR	ø9
Lane Configurations	↑↑	↑	↔	↑↑	↑			↑↑	↑	
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)										
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	342	0	0	512	353	
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		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?										
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	None	C-Min	None	C-Min	C-Min		Min	Min	Min	None
Walk Time (s)										7.0
Flash Dont Walk (s)										24.0
Pedestrian Calls (#/hr)										5
Act Effect 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	B	C	C	A			D	A	
Approach Delay	27.0		32.1					26.9		
Approach LOS	C		C					C		
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	

Intersection Summary

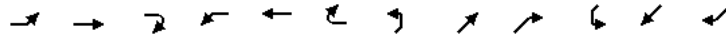
Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBL, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.81  
 Intersection Signal Delay: 24.3  
 Intersection LOS: C  
 Intersection Capacity Utilization 56.9%  
 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.  
 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





	→	↘	←	↙	↑	↗	↘	↓	↙
Movement	EBT	EBR	WBT	NBL	NBR	NBR2	SBL	SBT	SBR
Lane Configurations	↑↑	↗	↔	↗	↗			↗	↗
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	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			0.99	1.00
Satd. Flow (prot)	3282	1487	1776	3164	1276			2868	1516
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
Actuated Green, G (s)	19.0	40.8	19.0	21.8	39.8			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	B	C	C	B			D	A
Approach Delay (s)	23.7		26.6					24.6	
Approach LOS	C		C					C	
<b>Intersection Summary</b>									
HCM 2000 Control Delay			22.4			HCM 2000 Level of Service			C
HCM 2000 Volume to Capacity ratio			0.63						
Actuated Cycle Length (s)			90.0			Sum of lost time (s)			19.0
Intersection Capacity Utilization			56.9%			ICU Level of Service			B
Analysis Period (min)			15						
c Critical Lane Group									

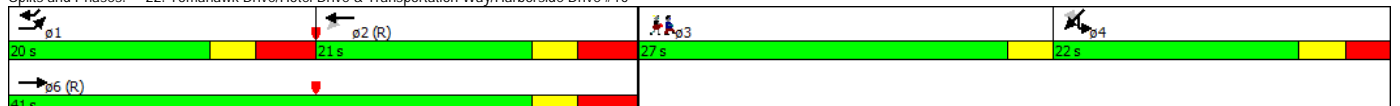


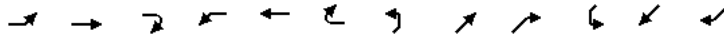
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR	ø3
Lane Configurations													
Volume (vph)	124	80	287	1	54	72	0	0	0	72	273	223	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12	
Grade (%)		0%			0%			0%			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			25			25			25			
Right Turn on Red			Yes			Yes			Yes				Yes
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 (%)													
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?										Yes	Yes		Yes
Vehicle Extension (s)	2.0	2.0		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	2.0	2.0	3.0
Time Before Reduce (s)	0.0	0.0		0.0	0.0					0.0	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0					0.0	0.0	0.0	0.0
Recall Mode	None	C-Max		C-Max	C-Max					None	None	None	None
Walk Time (s)													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	B			B						D	A	
Approach Delay		26.2			13.2						25.4		
Approach LOS		C			B						C		
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											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

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBT, Start of Green  
 Natural Cycle: 70  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 24.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 41.1%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 22: Tomahawk Drive/Hotel Drive & Transportation Way/Harborside Drive #10





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
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									c0.11	0.02
v/s Ratio Perm					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)	40.8	16.8			17.6						36.1	22.2
Level of Service	D	B			B						D	C
Approach Delay (s)		22.9			17.6			0.0			30.7	
Approach LOS		C			B			A			C	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	17.0
Intersection Capacity Utilization	41.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2	ø3	ø9
Lane Configurations			↑↑	↑	↑		↑				↑				
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			Yes			Yes			Yes			Yes			
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%	14%	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				
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)				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)				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	None						None		None	None	None
Walk Time (s)															7.0
Flash Dont Walk (s)															10.0
Pedestrian Calls (#/hr)															5
Act Effect 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				A	B	B		B			C				
Approach Delay						19.4					22.6				
Approach LOS						B					C				
Queue Length 50th (ft)				0	10	17		46			23				
Queue Length 95th (ft)				0	38	61		126			88				
Internal Link Dist (ft)		264			921			636			177				
Turn Bay Length (ft)					100										
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	
Area Type:	Other
Cycle Length:	90
Actuated Cycle Length:	47.6
Natural Cycle:	75
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.44
Intersection Signal Delay:	12.6
Intersection LOS:	B
Intersection Capacity Utilization:	33.8%
ICU Level of Service:	A
Analysis Period (min):	15



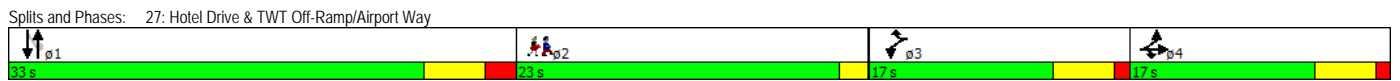
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	252	39	68	0	195	0	0	0	98	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5	5.0	5.0		4.5				4.5	
Lane Util. Factor			0.88	1.00	1.00		1.00				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			B	B	B		C				C	
Approach Delay (s)		10.4			13.1			20.9			20.3	
Approach LOS		B			B			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.5									B
HCM 2000 Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			53.0								22.0	
Intersection Capacity Utilization			33.8%									A
Analysis Period (min)			15									

c Critical Lane Group



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	ø2
Lane Configurations		↕	↕	↕		↕		↕			↕	↕	
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			25			25			25			
Right Turn on Red			Yes			Yes			Yes			Yes	
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)													
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										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%
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	-2.0		
Total Lost Time (s)		4.0	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)													13.0
Pedestrian Calls (#/hr)													15
Act Effect Green (s)		11.6	11.6	9.5		9.5		18.2			18.2		
Actuated g/C Ratio		0.22	0.22	0.18		0.18		0.35			0.35		
v/c Ratio		0.41	0.73	0.32		0.21		0.20			0.51		
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		C	A	C		A		A			B		
Approach Delay		13.7						4.8			18.4		
Approach LOS		B						A			B		
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)													
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		0	0	0		0		0			0		
Reduced v/c Ratio		0.31	0.67	0.20		0.15		0.12			0.28		

**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 LOS: B  
 Intersection Capacity Utilization 56.7%      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.














Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕	↕		↕		↕			↕	
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	
Permitted Phases										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				
v/s Ratio Perm											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		B	B	C		B		B			B	
Approach Delay (s)		18.0			20.7			12.0			14.7	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	52.9	Sum of lost time (s)	14.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group





						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	162	33	0	258	256	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)	176	36	0	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	
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	
v/s Ratio Prot	c0.12			0.17	c0.17	
v/s Ratio Perm						
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			A	A	
Approach Delay (s)	33.2			6.9	5.0	
Approach LOS	C			A	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay		13.4		HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio		0.34				
Actuated Cycle Length (s)		80.0		Sum of lost time (s)		11.0
Intersection Capacity Utilization		31.2%		ICU Level of Service		A
Analysis Period (min)		15				

c Critical Lane Group



Lane Group	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
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 Utilization	51.3%		ICU Level of Service A			
Analysis Period (min)	15					



Movement	WBL	WBR	NET	NER	SWL	SWT
Lane Configurations						
Volume (veh/h)	181	34	223	70	25	264
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)	197	37	242	76	27	287
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)						432
pX, platoon unblocked	0.95					
vC, conflicting volume	622	280		318		
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	574	280		318		
tC, single (s)	6.7	6.6		4.5		
tC, 2 stage (s)						
tF (s)	3.8	3.6		2.5		
p0 queue free %	51	95		97		
cM capacity (veh/h)	401	684		1064		

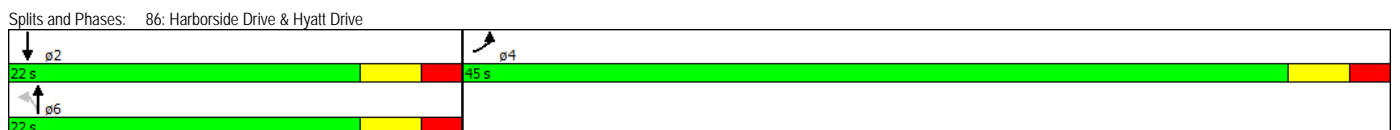
Direction, Lane #	WB 1	NE 1	SW 1
Volume Total	234	318	314
Volume Left	197	0	27
Volume Right	37	76	0
cSH	476	1700	1064
Volume to Capacity	0.49	0.19	0.03
Queue Length 95th (ft)	66	0	2
Control Delay (s)	20.5	0.0	1.0
Lane LOS	C		A
Approach Delay (s)	20.5	0.0	1.0
Approach LOS	C		

Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		51.3%	ICU Level of Service A
Analysis Period (min)		15	



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	TT			TT	TT	
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			
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)						
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			
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)	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)	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?						
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)	0.0		0.0	0.0	0.0	
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				5	
Act Effect 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	A			A	A	
Approach Delay	3.3			4.6	3.2	
Approach LOS	A			A	A	
Queue Length 50th (ft)	0			0	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	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.02			0.02	0.03	










Intersection Summary	
Area Type:	Other
Cycle Length:	67
Actuated Cycle Length:	20.8
Natural Cycle:	40
Control Type:	Actuated-Uncoordinated
Maximum v/c Ratio:	0.06
Intersection Signal Delay:	3.7
Intersection LOS:	A
Intersection Capacity Utilization:	24.2%
ICU Level of Service:	A
Analysis Period (min):	15





Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
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		
w/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	A			A	A	
Approach Delay (s)	5.3			3.9	3.8	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
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						
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
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	28.9%		ICU Level of Service A			
Analysis Period (min)	15					

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	124	7	138	125	7	181
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)	135	8	150	136	8	197
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						
vC, conflicting volume	332	218			286	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	332	218			286	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	99			99	
cM capacity (veh/h)	634	786			1273	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>		
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	B		A			
Approach Delay (s)	12.2	0.0	0.3			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.8			
Intersection Capacity Utilization			28.9%		ICU Level of Service	A
Analysis Period (min)			15			

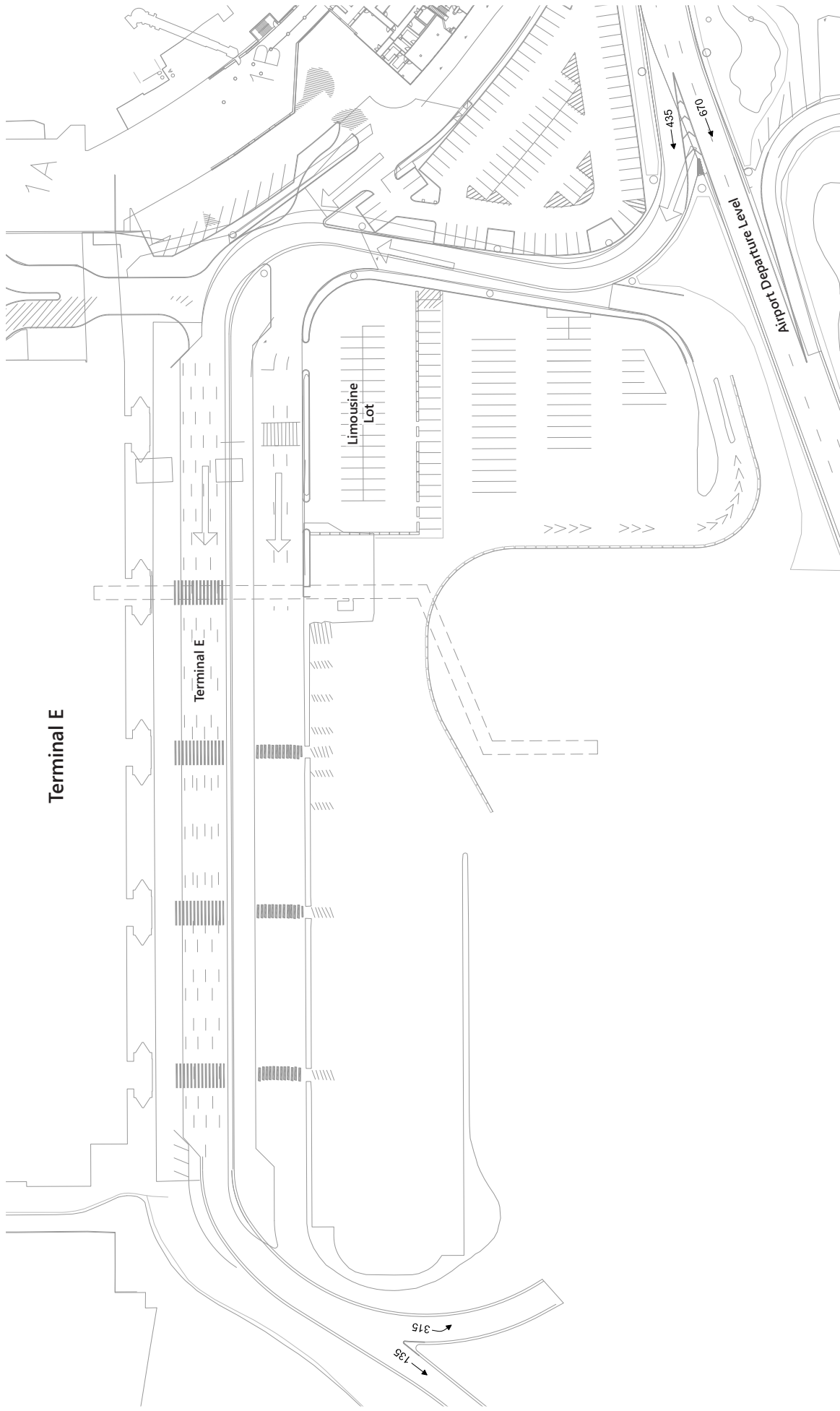
# Surface Transportation Figures

- 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

Terminal E

Limousine Lot

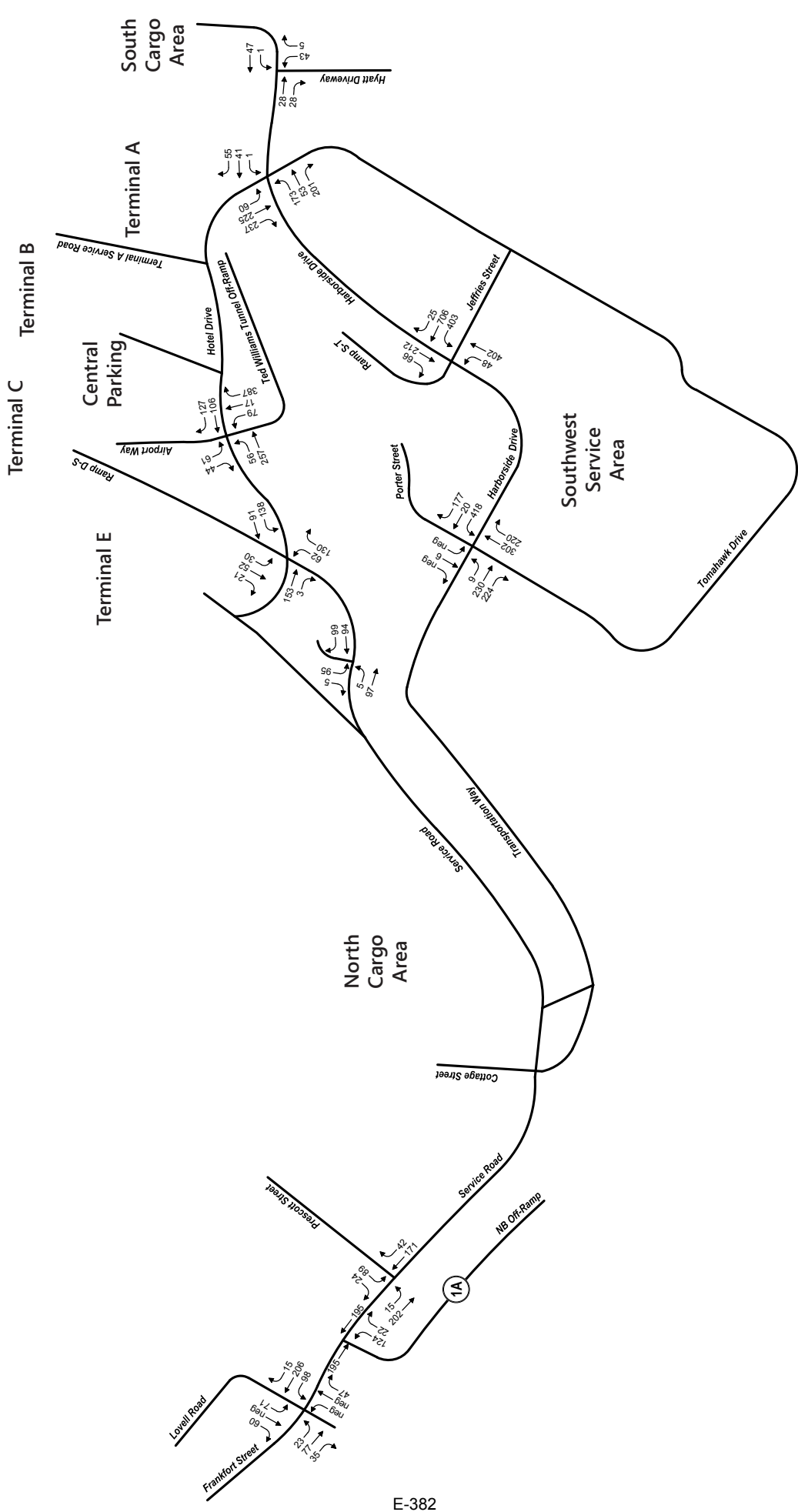
Airport Departure Level

**FIGURE E-2 August 2015 Departures Level - Peak Hour Traffic Volumes**

**Terminal E Modernization Project**







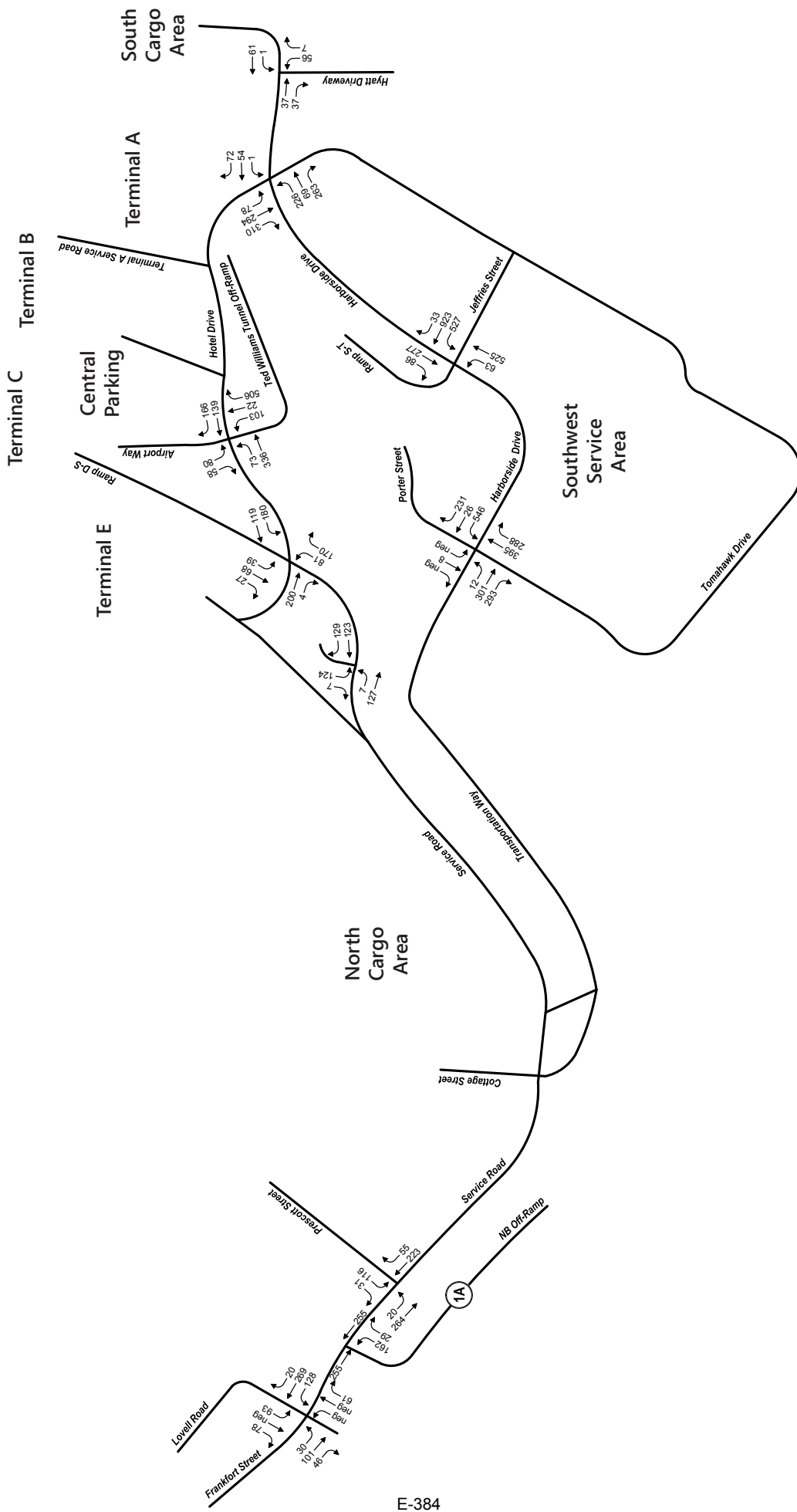
Terminal E Modernization Project

2015 Sunday - Peak Hour Traffic Volumes

FIGURE E-4

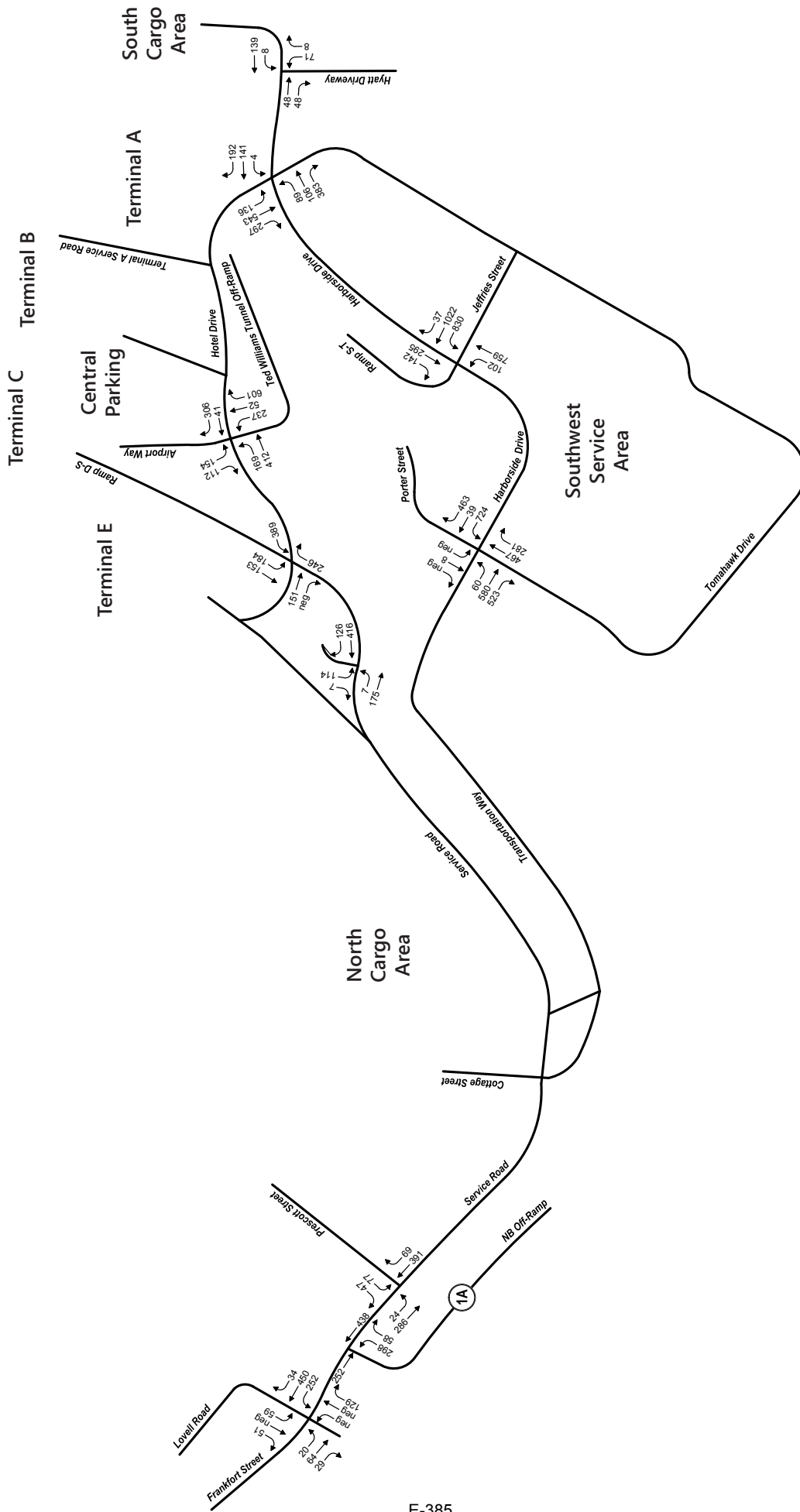
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NOT TO SCALE





**FIGURE E-6** No-Action (Existing Parking Freeze Remains) - Sunday Peak Hour Traffic Volumes **Terminal E Modernization Project**

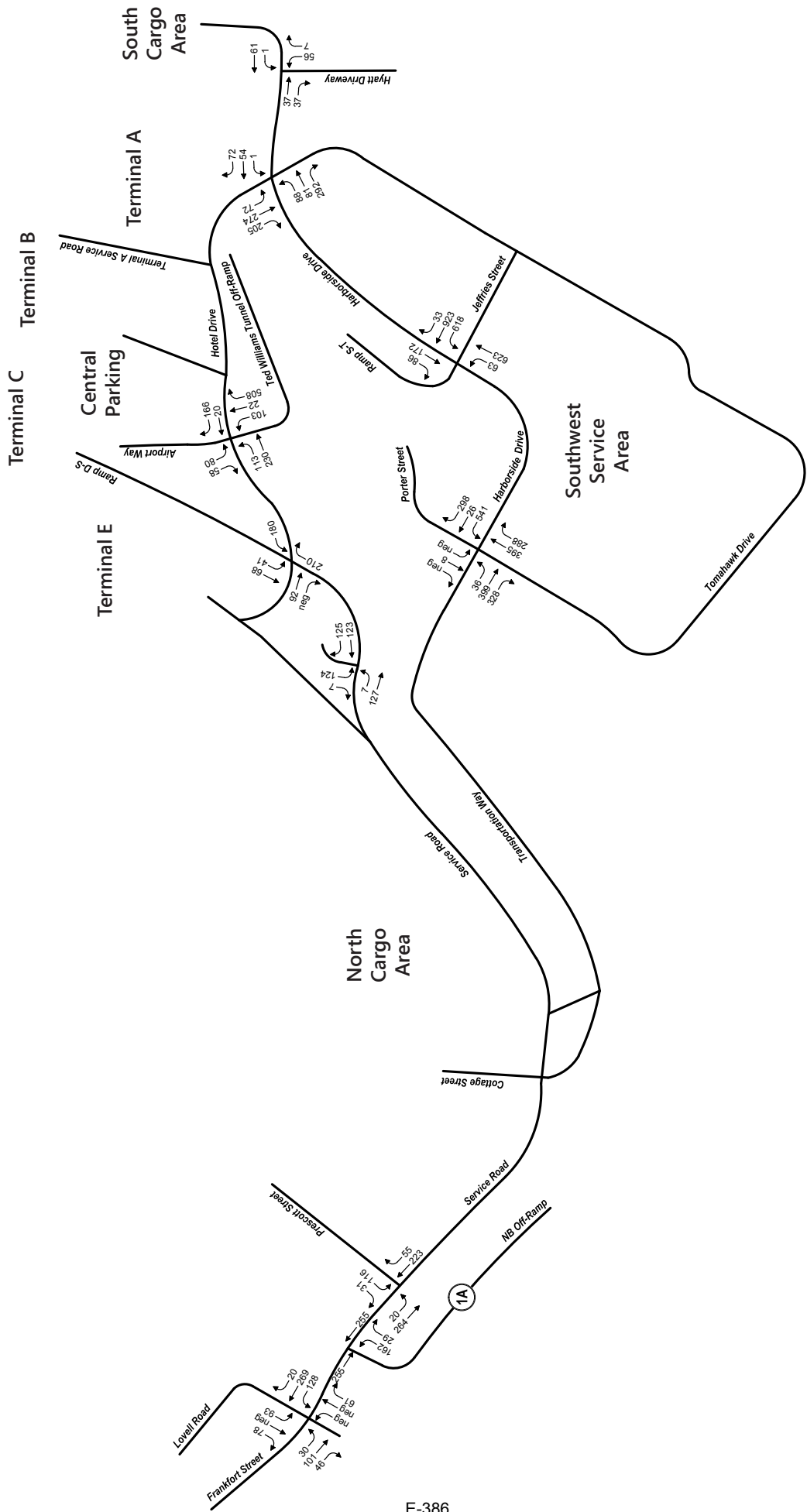
←  
NOT TO SCALE



**FIGURE E-7 Proposed Action (Existing Parking Freeze Remains) - Evening Peak Hour Traffic Volumes Terminal E Modernization Project**

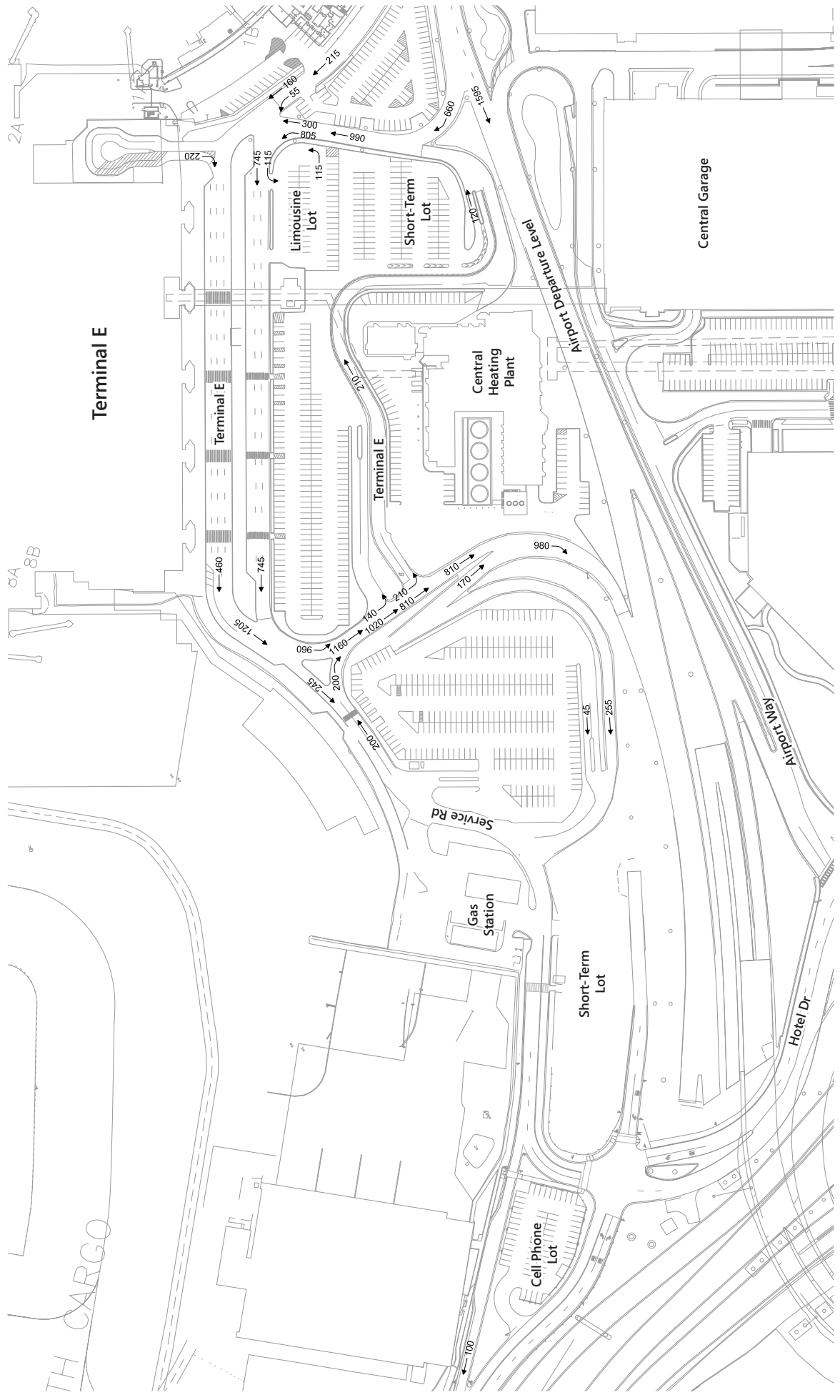
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NOT TO SCALE



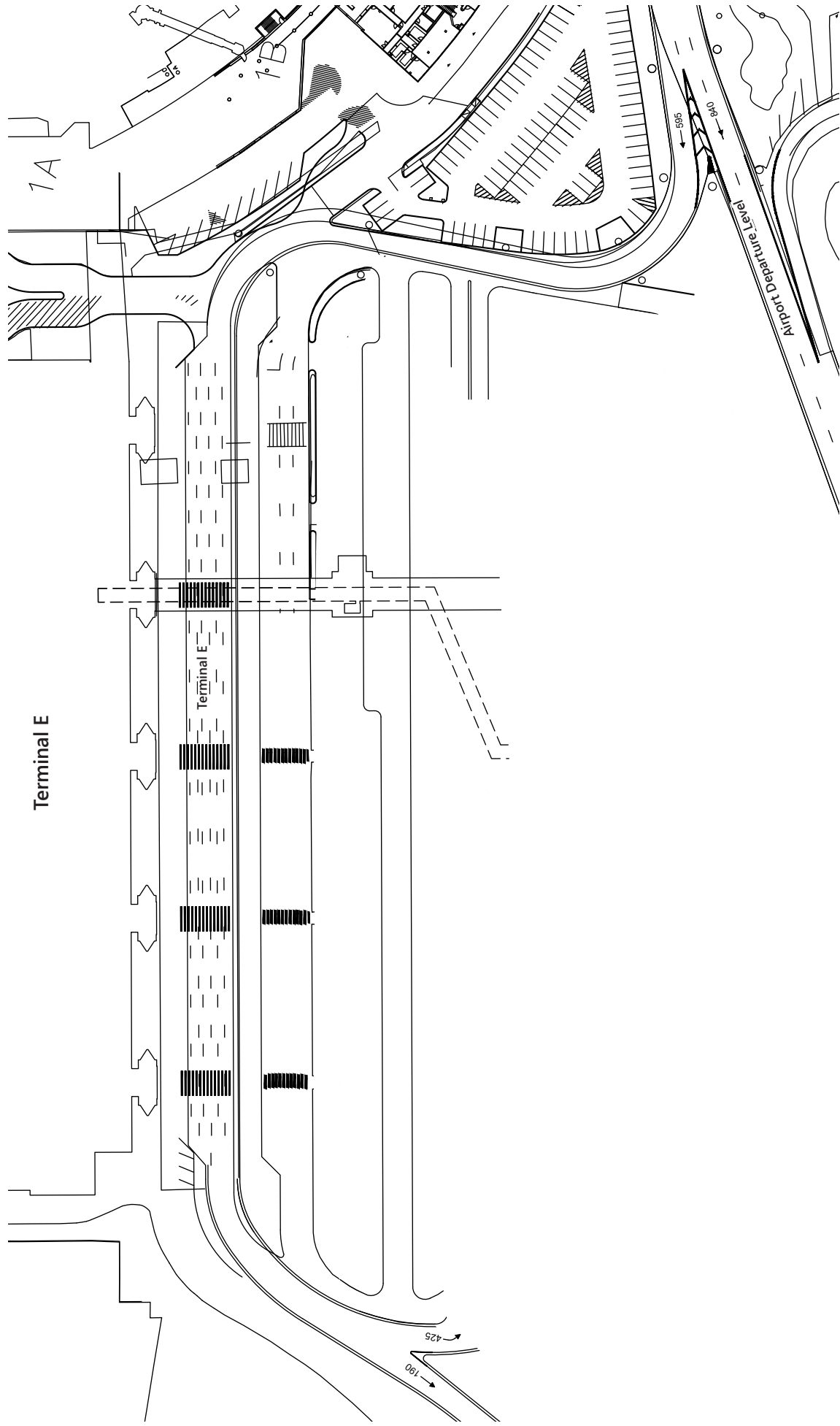


**FIGURE E-8 Proposed Action (Existing Parking Freeze Remains) - Sunday Peak Hour Traffic Volumes Terminal E Modernization Project**

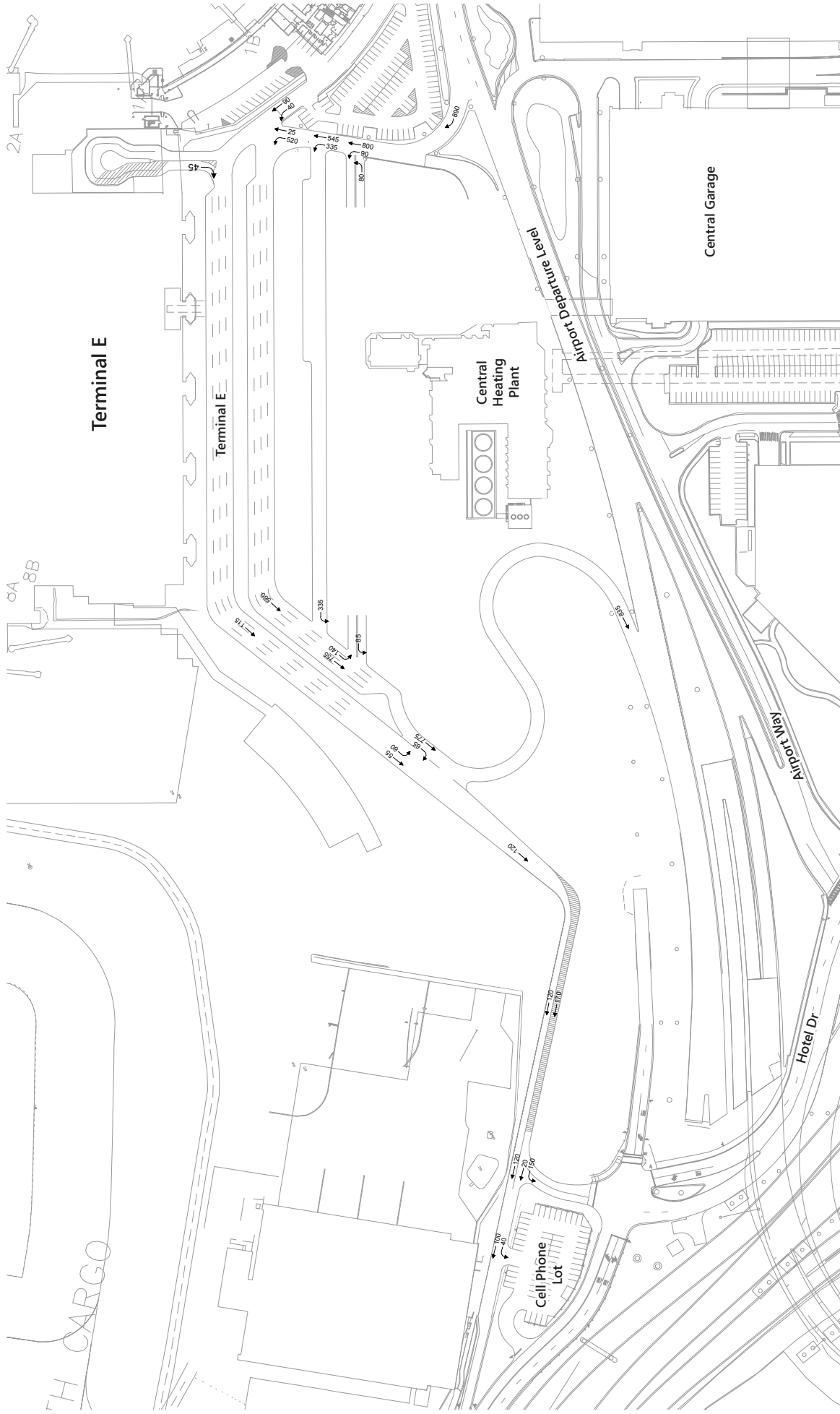
←  
NOT TO SCALE



**FIGURE E-9** No-Action (Existing Parking Freeze Remains) - Arrivals Level Peak Hour Traffic Volumes Terminal E Modernization Project

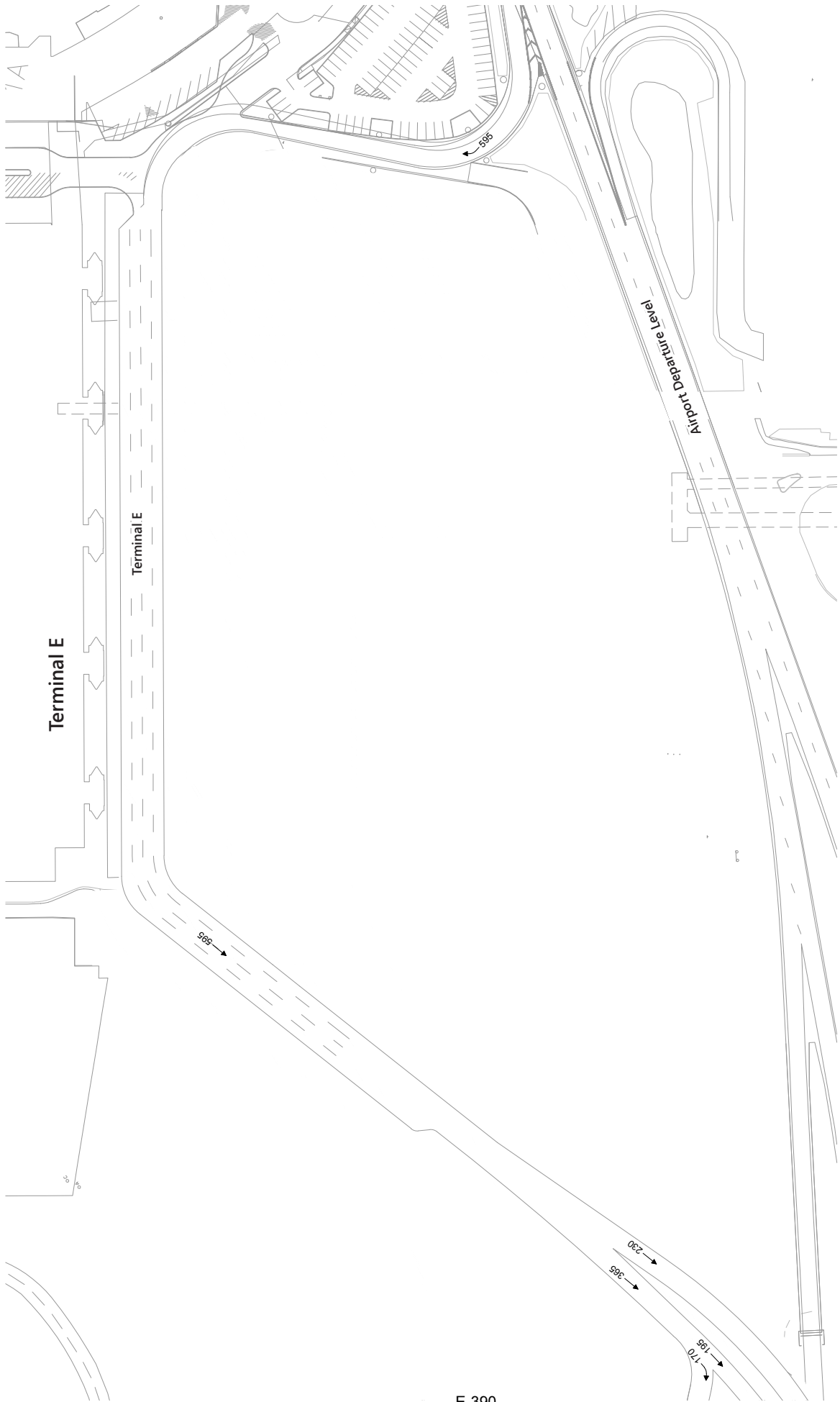


**FIGURE E-10 No-Action (Existing Parking Freeze Remains) - Departures Level Peak Hour Traffic Volumes Terminal E Modernization Project**

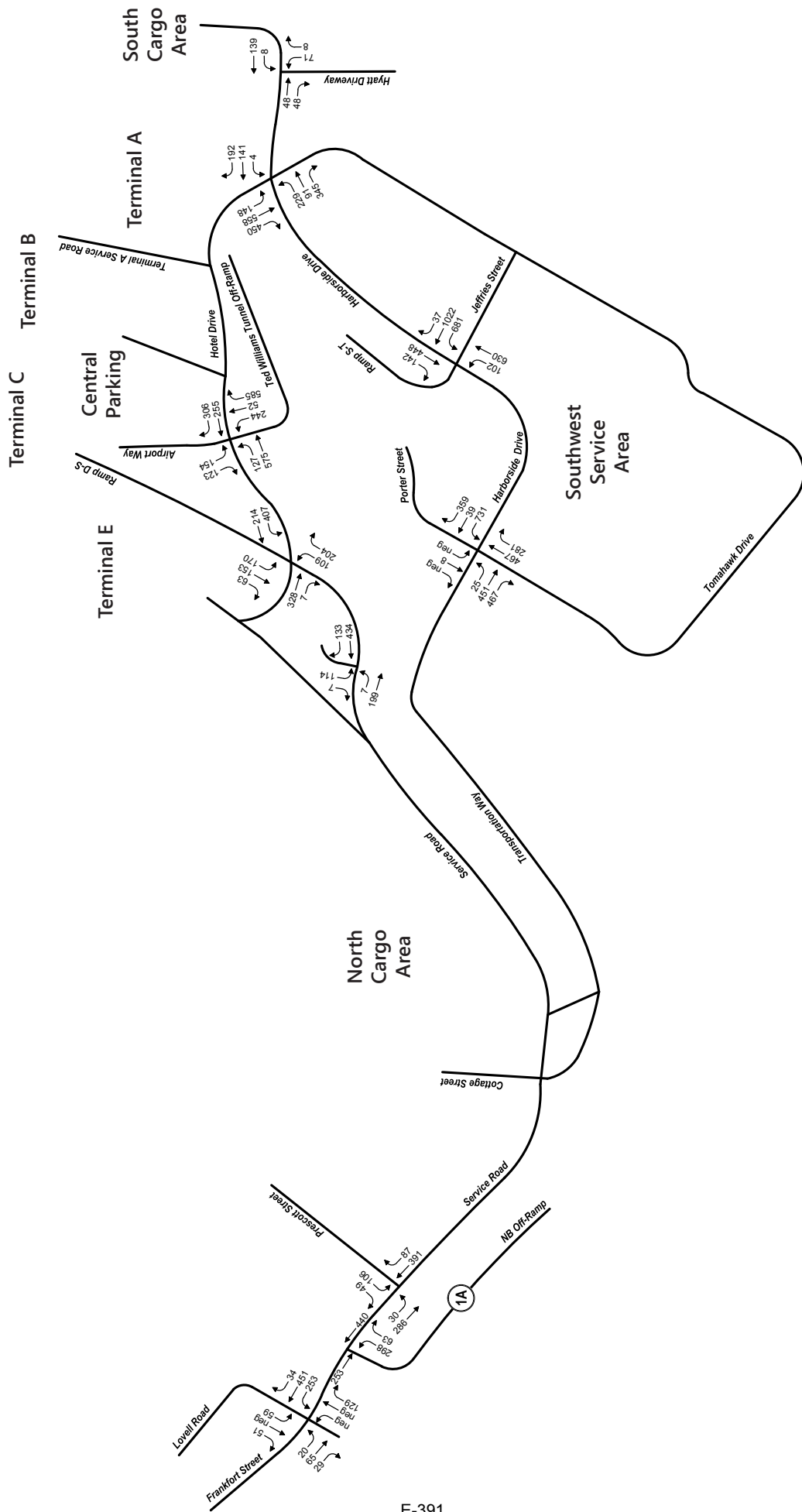


**FIGURE E-11 Proposed Action (Existing Parking Freeze Remains) - Arrivals Level Peak Hour Traffic Volumes Terminal E Modernization Project**





**FIGURE E-12 Proposed Action (Existing Parking Freeze Remains) - Departures Level Peak Hour Traffic Volumes Terminal E Modernization Project**



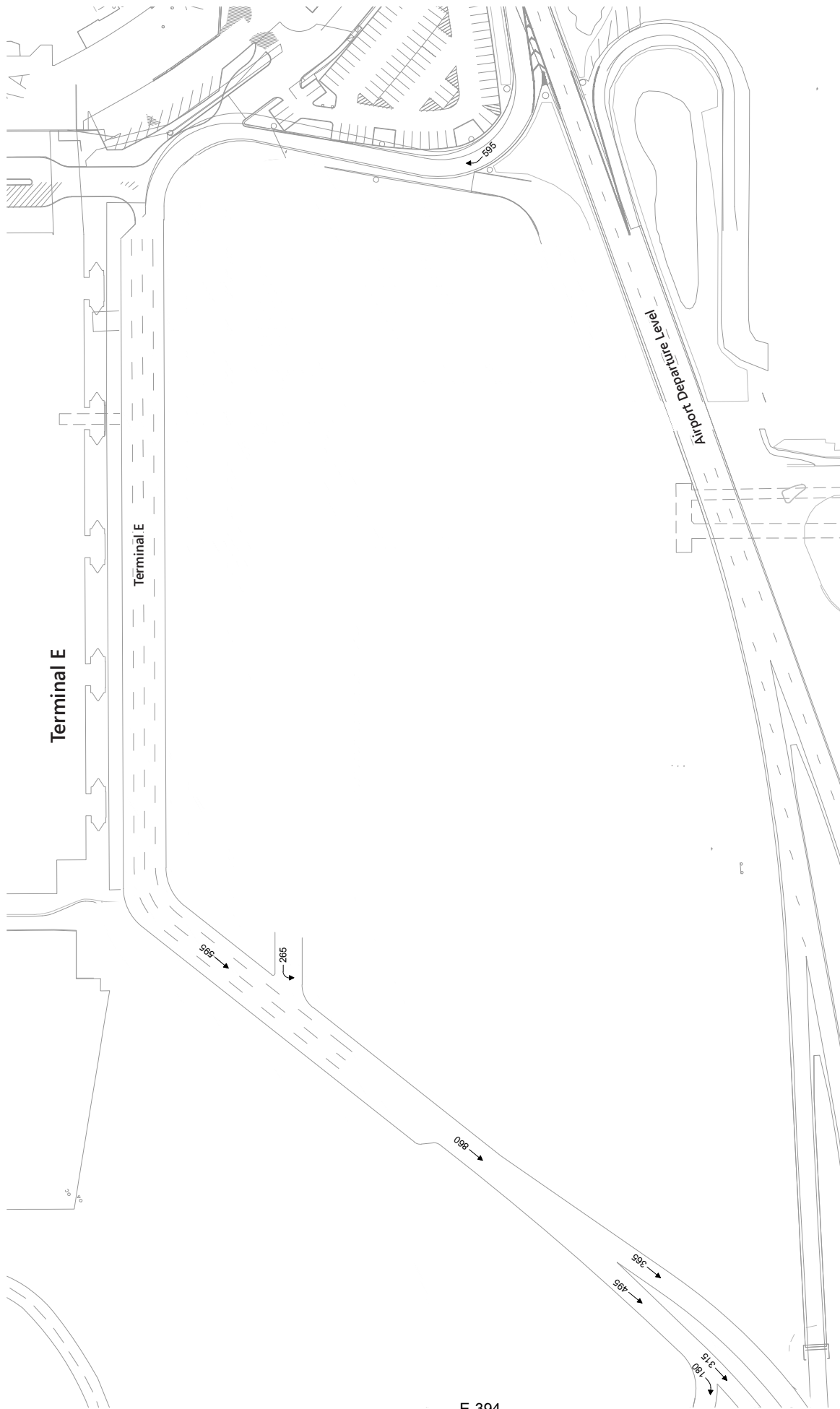
**FIGURE E-13 Proposed Action (Additional 5,000 On-Airport Parking Spaces) - Evening Peak Hour Traffic Volumes Terminal E Modernization Project**

←  
NOT TO SCALE









**FIGURE E-16 Proposed Action (Additional 5,000 On-Airport Parking Spaces) - Departures Level Peak Hour Traffic Volumes Terminal E Modernization Project**

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.

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### 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
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	LTOs	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.



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## 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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Exhaust"/>
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Vapor Loss"/>
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Exhaust"/>
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Exhaust"/>
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Exhaust"/>
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Exhaust"/>
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Vapor Loss"/>
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Loss"/>
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Exhaust"/>
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Source: KBE and Massport.

**Table F-5 MOVES2014a Sample Output File**

MasterKe	MOVES	Run	iteration	yearID	monthID	dayID	hourID	stateID	countyID	zoneID	linkID	pollutan	process	source	Tyreg	Class	fuel	Type	model	Year	road	Type	SCC	
emissionactivityactivityemissionmassUnitdistanceUnits																								
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**LOGAN  
AIRPORT**  
Terminal E  
Modernization  
Project

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1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	87NULL	42	0	0	0	0	00.504068	10.8496980.593232g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	79NULL	42	0	0	0	0	00.447389	10.8496980.526527g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	66NULL	42	0	0	0	0	07.84E-05	10.8496989.22E-05g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	59NULL	42	0	0	0	0	00.000477	10.8496980.000561g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	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	06.99E-05	10.8496988.22E-05g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	52NULL	42	0	0	0	0	00.000176	10.8496980.000207g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	51NULL	42	0	0	0	0	00.000443	10.8496980.000522g	mi		
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1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	35NULL	42	0	0	0	0	00.000621	10.8496980.000731g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	31NULL	42	0	0	0	0	00.008199	10.8496980.009649g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	5NULL	42	0	0	0	0	00.023486	10.8496980.027641g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	3NULL	42	0	0	0	0	05.935894	10.8496986.985887g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	2NULL	42	0	0	0	0	01.935401	10.8496982.277751g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	21	1NULL	42	0	0	0	0	00.470876	10.8496980.554168g	mi		
1,1,2015	1	1	2015	1	5	7	25	25025	250250	20	122NULL	31	0	0	0	0	0.0.00121	1	1.0.00121g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	20	121NULL	31	0	0	0	0	00.000495	1	10.000495g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	20	119NULL	31	0	0	0	0	0	0	1	0g	mi
1,1,2015	1	1	2015	1	5	7	25	25025	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	25	25025	250250	20	117NULL	31	0	0	0	0	00.001677	1	10.001677g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	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	25025	250250	20	112NULL	31	0	0	0	0	00.002206	1	10.002206g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	20	111NULL	31	0	0	0	0	00.006048	1	10.006048g		



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1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	66NULL	31	0	0	0	0	02.75E-05	1	12.75E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	59NULL	31	0	0	0	0	00.000192	1	10.000192g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	58NULL	31	0	0	0	0	03.47E-05	1	13.47E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	57NULL	31	0	0	0	0	03.77E-05	1	13.77E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	56NULL	31	0	0	0	0	0 3.7E-06	1	1 3.7E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	55NULL	31	0	0	0	0	00.000156	1	10.000156g	mi
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
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	53NULL	31	0	0	0	0	0 9.2E-06	1	1 9.2E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	52NULL	31	0	0	0	0	05.32E-06	1	15.32E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	51NULL	31	0	0	0	0	01.33E-05	1	11.33E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	36NULL	31	0	0	0	0	00.000294	1	10.000294g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	35NULL	31	0	0	0	0	03.33E-05	1	13.33E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	31NULL	31	0	0	0	0	00.008832	1	10.008832g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	5NULL	31	0	0	0	0	00.004757	1	10.004757g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	3NULL	31	0	0	0	0	00.333744	1	10.333744g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	2NULL	31	0	0	0	0	02.245007	1	12.245007g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	20	1NULL	31	0	0	0	0	00.098402	1	10.098402g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	122NULL	21	0	0	0	0	00.001468	1	10.001468g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	121NULL	21	0	0	0	0	00.000604	1	10.000604g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	119NULL	21	0	0	0	0	0 0	1	1 0g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	118NULL	21	0	0	0	0	00.010794	1	10.010794g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	117NULL	21	0	0	0	0	00.001656	1	10.001656g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	116NULL	21	0	0	0	0	00.004936	1	10.004936g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	115NULL	21	0	0	0	0	00.000407	1	10.000407g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	112NULL	21	0	0	0	0	00.001839	1	10.001839g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	111NULL	21	0	0	0	0	00.007341	1	10.007341g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	110NULL	21	0	0	0	0	00.012633	1	10.012633g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	107NULL	21	0	0	0	0	0 0.01104	1	1 0.01104g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	106NULL	21	0	0	0	0	00.039484	1	10.039484g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	100NULL	21	0	0	0	0	00.014279	1	10.014279g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	91NULL	21	0	0	0	0	00.004459	1	10.004459g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	90NULL	21	0	0	0	0	0 338.178	1	1 338.178g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	87NULL	21	0	0	0	0	00.093104	1	10.093104g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	79NULL	21	0	0	0	0	00.088142	1	10.088142g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	66NULL	21	0	0	0	0	02.68E-05	1	12.68E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	59NULL	21	0	0	0	0	00.000241	1	10.000241g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	58NULL	21	0	0	0	0	04.27E-05	1	14.27E-05g	mi
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
1.1.2015	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	1	1 0.00019g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	54NULL	21	0	0	0	0	0 1.9E-05	1	1 1.9E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	53NULL	21	0	0	0	0	01.12E-05	1	11.12E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	52NULL	21	0	0	0	0	05.26E-06	1	15.26E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	51NULL	21	0	0	0	0	01.38E-05	1	11.38E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	36NULL	21	0	0	0	0	00.000366	1	10.000366g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	35NULL	21	0	0	0	0	03.81E-05	1	13.81E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	31NULL	21	0	0	0	0	00.006712	1	10.006712g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	5NULL	21	0	0	0	0	0 0.00277	1	1 0.00277g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	3NULL	21	0	0	0	0	00.240452	1	10.240452g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	2NULL	21	0	0	0	0	01.830129	1	11.830129g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	19	1NULL	21	0	0	0	0	00.090912	1	10.090912g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	122NULL	42	0	0	0	0	00.011881	10.8496980.013982g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	121NULL	42	0	0	0	0	00.004401	10.849698 0.00518g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	119NULL	42	0	0	0	0	0 0	10.849698 0g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	118NULL	42	0	0	0	0	0 0.08913	10.8496980.104896g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	117NULL	42	0	0	0	0	00.003033	10.8496980.003569g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	116NULL	42	0	0	0	0	0 0.02313	10.8496980.027221g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	115NULL	42	0	0	0	0	00.007323	10.8496980.008618g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	112NULL	42	0	0	0	0	00.098904	10.849698 0.1164g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	111NULL	42	0	0	0	0	00.059404	10.8496980.069912g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	110NULL	42	0	0	0	0	00.188034	10.8496980.221295g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	107NULL	42	0	0	0	0	00.020217	10.8496980.023794g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	106NULL	42	0	0	0	0	00.185036	10.8496980.217767g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	100NULL	42	0	0	0	0	00.204385	10.8496980.240538g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	91NULL	42	0	0	0	0	00.011985	10.8496980.014106g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	90NULL	42	0	0	0	0	0 931.469	10.8496981096.235g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	87NULL	42	0	0	0	0	00.560882	10.8496980.660096g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	79NULL	42	0	0	0	0	00.497627	10.8496980.585651g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	66NULL	42	0	0	0	0	0 9.4E-05	10.8496980.000111g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	59NULL	42	0	0	0	0	00.000548	10.8496980.000645g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	58NULL	42	0	0	0	0	00.000241	10.8496980.000283g	mi	
1.1.2015	1	1	2015	1</																

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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	250250	18	3NULL	42	0	0	0	0	06.236032	10.8496987.339116g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	2NULL	42	0	0	0	0	02.031828	10.8496982.391235g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	18	1NULL	42	0	0	0	0	00.523628	10.8496980.616252g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	122NULL	31	0	0	0	0	0.000136	1 1.0.00136g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	121NULL	31	0	0	0	0	00.000556	1 10.000556g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	119NULL	31	0	0	0	0	0 0 0 1 1	0g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	118NULL	31	0	0	0	0	00.010046	1 10.010046g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	117NULL	31	0	0	0	0	00.001806	1 10.001806g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	116NULL	31	0	0	0	0	00.007326	1 10.007326g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	115NULL	31	0	0	0	0	00.000436	1 10.000436g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	112NULL	31	0	0	0	0	00.002517	1 10.002517g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	111NULL	31	0	0	0	0	00.006801	1 10.006801g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	110NULL	31	0	0	0	0	00.012562	1 10.012562g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	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	250250	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	250250	17	79NULL	31	0	0	0	0	00.102863	1 10.102863g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	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	250250	17	59NULL	31	0	0	0	0	00.000215	1 10.000215g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	58NULL	31	0	0	0	0	03.89E-05	1 13.89E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	57NULL	31	0	0	0	0	04.27E-05	1 14.27E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	56NULL	31	0	0	0	0	04.16E-06	1 14.16E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	55NULL	31	0	0	0	0	00.000175	1 10.000175g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	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	250250	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	250250	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	250250	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	0.000033	1 1.000033g	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	250250	17	31NULL	31	0	0	0	0	00.009886	1 10.009886g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	5NULL	31	0	0	0	0	00.005129	1 10.005129g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	3NULL	31	0	0	0	0	00.358894	1 10.358894g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	2NULL	31	0	0	0	0	02.373415	1 12.373415g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	17	1NULL	31	0	0	0	0	00.107992	1 10.107992g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	122NULL	21	0	0	0	0	00.001573	1 10.001573g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	121NULL	21	0	0	0	0	00.000647	1 10.000647g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	119NULL	21	0	0	0	0	0 0 0 1 1	0g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	118NULL	21	0	0	0	0	00.011567	1 10.011567g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	117NULL	21	0	0	0	0	00.001784	1 10.001784g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	116NULL	21	0	0	0	0	00.006553	1 10.006553g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	115NULL	21	0	0	0	0	00.000436	1 10.000436g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	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	25	25025	250250	16	107NULL	21	0	0	0	0	00.011893	1 10.011893g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	106NULL	21	0	0	0	0	00.052421	1 10.052421g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	100NULL	21	0	0	0	0	00.015302	1 10.015302g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	91NULL	21	0	0	0	0	00.004985	1 10.004985g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	90NULL	21	0	0	0	0	0.378.021	1 1.378.021g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	87NULL	21	0	0	0	0	00.101822	1 10.101822g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	79NULL	21	0	0	0	0	00.096439	1 10.096439g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	66NULL	21	0	0	0	0	03.22E-05	1 13.22E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	59NULL	21	0	0	0	0	00.000258	1 10.000258g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	58NULL	21	0	0	0	0	04.57E-05	1 14.57E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	57NULL	21	0	0	0	0	04.59E-05	1 14.59E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	56NULL	21	0	0	0	0	04.81E-06	1 14.81E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	55NULL	21	0	0	0	0	00.000204	1 10.000204g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	54NULL	21	0	0	0	0	02.04E-05	1 12.04E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	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	25	25025	250250	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	250250	16	51NULL	21	0	0	0	0	01.48E-05	1 11.48E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	36NULL	21	0	0	0	0	00.000392	1 10.000392g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	35NULL	21	0	0	0	0	04.08E-05	1 14.08E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	31NULL	21	0	0	0	0	00.007503	1 10.007503g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	5NULL	21	0	0	0	0	00.002985	1 10.002985g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	3NULL	21	0	0	0	0	00.265548	1 10.265548g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	16	2NULL	21	0	0	0	0	01.940016	1 11.940016g	

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1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	116NULL	42	0	0	0	0	00.026425	10.8496980.031099g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	115NULL	42	0	0	0	0	00.007735	10.8496980.009103g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	112NULL	42	0	0	0	0	00.089776	10.8496980.105656g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	111NULL	42	0	0	0	0	00.071499	10.8496980.084146g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	110NULL	42	0	0	0	0	0 0.19598	10.8496980.230647g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	107NULL	42	0	0	0	0	00.021781	10.8496980.025633g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	106NULL	42	0	0	0	0	00.211401	10.8496980.248795g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	100NULL	42	0	0	0	0	00.213022	10.8496980.250703g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	91NULL	42	0	0	0	0	0 0.01174	10.8496980.013817g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	90NULL	42	0	0	0	0	0 912.417	10.8496981073.813g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	87NULL	42	0	0	0	0	00.646104	10.8496980.760393g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	79NULL	42	0	0	0	0	00.572985	10.8496980.674339g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	66NULL	42	0	0	0	0	00.000118	10.8496980.000138g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	59NULL	42	0	0	0	0	00.000655	10.8496980.000771g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	58NULL	42	0	0	0	0	00.000289	10.8496980.000341g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	57NULL	42	0	0	0	0	00.001063	10.849698 0.00125g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	56NULL	42	0	0	0	0	04.29E-05	10.8496985.05E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	55NULL	42	0	0	0	0	00.001706	10.8496980.002008g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	54NULL	42	0	0	0	0	06.34E-05	10.8496987.47E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	53NULL	42	0	0	0	0	09.69E-05	10.8496980.000114g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	52NULL	42	0	0	0	0	00.000226	10.8496980.000266g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	51NULL	42	0	0	0	0	00.000621	10.849698 0.00073g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	36NULL	42	0	0	0	0	0 0.00173	10.8496980.002035g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	35NULL	42	0	0	0	0	00.000871	10.8496980.001025g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	31NULL	42	0	0	0	0	00.007923	10.8496980.009325g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	5NULL	42	0	0	0	0	00.029776	10.8496980.035043g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	3NULL	42	0	0	0	0	0 6.68623	10.8496987.868948g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	2NULL	42	0	0	0	0	02.176459	10.849698 2.56145g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	15	1NULL	42	0	0	0	0	0 0.60276	10.8496980.709382g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	122NULL	31	0	0	0	0	00.001777	1 10.001777g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	121NULL	31	0	0	0	0	00.000726	1 10.000726g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	119NULL	31	0	0	0	0	0 0 1 1	0g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	118NULL	31	0	0	0	0	0 0.01312	1 1 0.01312g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	117NULL	31	0	0	0	0	00.001946	1 10.001946g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	116NULL	31	0	0	0	0	00.008266	1 10.008266g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	115NULL	31	0	0	0	0	00.000564	1 10.000564g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	112NULL	31	0	0	0	0	0 0.00315	1 1 0.00315g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	111NULL	31	0	0	0	0	00.008887	1 10.008887g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	110NULL	31	0	0	0	0	0 0.01627	1 1 0.01627g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	107NULL	31	0	0	0	0	00.012972	1 10.012972g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	106NULL	31	0	0	0	0	00.066126	1 10.066126g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	100NULL	31	0	0	0	0	00.018313	1 10.018313g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	91NULL	31	0	0	0	0	00.007399	1 10.007399g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	90NULL	31	0	0	0	0	0 561.352	1 1 561.352g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	87NULL	31	0	0	0	0	00.119256	1 10.119256g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	79NULL	31	0	0	0	0	00.115548	1 10.115548g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	66NULL	31	0	0	0	0	04.12E-05	1 14.12E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	59NULL	31	0	0	0	0	0 0.00028	1 1 0.00028g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	58NULL	31	0	0	0	0	05.08E-05	1 15.08E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	57NULL	31	0	0	0	0	0 5.6E-05	1 1 5.6E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	56NULL	31	0	0	0	0	05.43E-06	1 15.43E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	55NULL	31	0	0	0	0	00.000229	1 10.000229g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	54NULL	31	0	0	0	0	02.23E-05	1 12.23E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	53NULL	31	0	0	0	0	01.35E-05	1 11.35E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	52NULL	31	0	0	0	0	07.94E-06	1 17.94E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	51NULL	31	0	0	0	0	01.99E-05	1 11.99E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	36NULL	31	0	0	0	0	00.000431	1 10.000431g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	35NULL	31	0	0	0	0	04.93E-05	1 14.93E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	31NULL	31	0	0	0	0	00.011002	1 10.011002g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	5NULL	31	0	0	0	0	00.005772	1 10.005772g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	3NULL	31	0	0	0	0	00.374412	1 10.374412g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	2NULL	31	0	0	0	0	02.858259	1 12.858259g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	14	1NULL	31	0	0	0	0	0 0.12132	1 1 0.12132g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	122NULL	21	0	0	0	0	00.002049	1 10.002049g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	121NULL	21	0	0	0	0	00.000842	1 10.000842g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	119NULL	21	0	0	0	0	0 0 1 1	0g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	118NULL	21	0	0	0	0	00.015065	1 10.015065g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	117NULL	21	0	0	0	0	00.001922	1 10.001922g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	116NULL	21	0	0	0	0	00.007455	1 10.007455g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	115NULL	21	0	0	0	0	00.000567	1 10.000567g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	112NULL	21	0	0	0	0	00.002567	1 10.002567g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	111NULL	21	0	0	0	0	00.010246	1 10.010246g	mi
1.1.2015	1																		

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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	25025	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	25025	250250	13	59NULL	21	0	0	0	0	00.000336	1	10.000336g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	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		
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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	25025	250250	13	31NULL	21	0	0	0	0	00.008429	1	10.008429g	mi		
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1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	3NULL	21	0	0	0	0	00.277781	1	10.277781g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	2NULL	21	0	0	0	0	02.334802	1	12.334802g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	13	1NULL	21	0	0	0	0	00.111907	1	10.111907g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	122NULL	42	0	0	0	0	00.018331	10.8496980.021574g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	121NULL	42	0	0	0	0	00.006817	10.8496980.008022g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	119NULL	42	0	0	0	0	0	0	10.849698	Og	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	118NULL	42	0	0	0	0	00.134661	10.8496980.158481g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	117NULL	42	0	0	0	0	00.003519	10.8496980.004142g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	116NULL	42	0	0	0	0	00.031918	10.8496980.037564g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	115NULL	42	0	0	0	0	00.008422	10.8496980.009912g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	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	25025	250250	12	111NULL	42	0	0	0	0	00.091656	10.8496980.107869g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	110NULL	42	0	0	0	0	00.209222	10.8496980.246231g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	107NULL	42	0	0	0	0	00.023463	10.8496980.027613g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	106NULL	42	0	0	0	0	00.255344	10.8496980.300511g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	100NULL	42	0	0	0	0	00.227416	10.8496980.267643g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	91NULL	42	0	0	0	0	00.011332	10.8496980.013336g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	90NULL	42	0	0	0	0	0.880.665	10.8496980.1036.445g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	87NULL	42	0	0	0	0	00.788143	10.8496980.927557g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	79NULL	42	0	0	0	0	00.698582	10.8496980.822154g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	66NULL	42	0	0	0	0	00.000157	10.8496980.000184g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	59NULL	42	0	0	0	0	00.000833	10.849698	0.00098g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	58NULL	42	0	0	0	0	00.000371	10.8496980.000436g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	57NULL	42	0	0	0	0	00.001366	10.8496980.001607g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	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	25025	250250	12	55NULL	42	0	0	0	0	00.002188	10.8496980.002575g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	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	25025	250250	12	53NULL	42	0	0	0	0	00.000124	10.8496980.000146g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	52NULL	42	0	0	0	0	00.000276	10.8496980.000324g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	51NULL	42	0	0	0	0	00.000798	10.8496980.000939g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	36NULL	42	0	0	0	0	00.002225	10.8496980.002619g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	35NULL	42	0	0	0	0	00.001121	10.8496980.001319g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	31NULL	42	0	0	0	0	00.007647	10.849698	0.009g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	5NULL	42	0	0	0	0	00.036065	10.8496980.042445g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	3NULL	42	0	0	0	0	07.436566	10.849698	8.75201g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	2NULL	42	0	0	0	0	02.417507	10.8496982.845136g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	12	1NULL	42	0	0	0	0	00.734646	10.8496980.864596g	mi			
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	122NULL	31	0	0	0	0	00.001977	1	10.001977g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	121NULL	31	0	0	0	0	00.000807	1	10.000807g	mi		
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1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	118NULL	31	0	0	0	0	00.014595	1	10.014595g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	117NULL	31	0	0	0	0	00.002097	1	10.002097g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	116NULL	31	0	0	0	0	00.009857	1	10.009857g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	115NULL	31	0	0	0	0	00.000638	1	10.000638g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	112NULL	31	0	0	0	0	00.003511	1	10.003511g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	111NULL	31	0	0	0	0	00.009883	1	10.009883g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	110NULL	31	0	0	0	0	00.018106	1	10.018106g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	107NULL	31	0	0	0	0	00.013977	1	10.013977g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	106NULL	31	0	0	0	0	00.078854	1	10.078854g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	100NULL	31	0	0	0	0	00.020368	1	10.020368g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	91NULL	31	0	0	0	0	00.008538	1	10.008538g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	90NULL	31	0	0	0	0	0.647.794	1	1.647.794g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	87NULL	31	0	0	0	0	0.0.13722	1	0.13722g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	79NULL	31	0	0	0	0	00.132762	1	10.132762g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	66NULL	31	0	0	0	0	05.49E-05	1	15.49E-05g	mi		
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	59NULL	31	0	0	0	0	00.000308	1	10.00			

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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
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	35NULL	31	0	0	0	0	05.59E-05	1	15.59E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	31NULL	31	0	0	0	0	00.012699	1	10.012699g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	5NULL	31	0	0	0	0	00.006408	1	10.006408g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	3NULL	31	0	0	0	0	00.391071	1	10.391071g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	2NULL	31	0	0	0	0	03.217941	1	13.217941g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	11	1NULL	31	0	0	0	0	0 0.13917	1	1 0.13917g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	122NULL	21	0	0	0	0	00.002337	1	10.002337g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	121NULL	21	0	0	0	0	00.000961	1	10.000961g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	119NULL	21	0	0	0	0	0 0 0 1 1	0g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	118NULL	21	0	0	0	0	00.017179	1	10.017179g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	117NULL	21	0	0	0	0	00.002071	1	10.002071g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	116NULL	21	0	0	0	0	00.008887	1	10.008887g	mi
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	25025	250250	10	111NULL	21	0	0	0	0	00.011684	1	10.011684g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	110NULL	21	0	0	0	0	00.020106	1	10.020106g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	107NULL	21	0	0	0	0	00.013807	1	10.013807g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	106NULL	21	0	0	0	0	00.071098	1	10.071098g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	100NULL	21	0	0	0	0	00.022727	1	10.022727g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	91NULL	21	0	0	0	0	00.006505	1	10.006505g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	90NULL	21	0	0	0	0	0 493.31	1	1 493.31g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	87NULL	21	0	0	0	0	00.132547	1	10.132547g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	79NULL	21	0	0	0	0	00.125715	1	10.125715g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	66NULL	21	0	0	0	0	05.37E-05	1	15.37E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	59NULL	21	0	0	0	0	00.000383	1	10.000383g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	58NULL	21	0	0	0	0	06.79E-05	1	16.79E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	57NULL	21	0	0	0	0	06.81E-05	1	16.81E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	56NULL	21	0	0	0	0	07.14E-06	1	17.14E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	55NULL	21	0	0	0	0	00.000303	1	10.000303g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	54NULL	21	0	0	0	0	03.03E-05	1	13.03E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	53NULL	21	0	0	0	0	01.79E-05	1	11.79E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	52NULL	21	0	0	0	0	08.36E-06	1	18.36E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	51NULL	21	0	0	0	0	0 2.2E-05	1	1 2.2E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	36NULL	21	0	0	0	0	00.000582	1	10.000582g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	35NULL	21	0	0	0	0	06.06E-05	1	16.06E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	31NULL	21	0	0	0	0	00.009791	1	10.009791g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	5NULL	21	0	0	0	0	00.003869	1	10.003869g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	3NULL	21	0	0	0	0	00.289106	1	10.289106g	mi
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
1.1.2015	1	1	2015	1	5	7	25	25025	250250	10	1NULL	21	0	0	0	0	00.129584	1	10.129584g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	122NULL	42	0	0	0	0	00.032626	10.8496980.038397g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	121NULL	42	0	0	0	0	00.012126	10.8496980.014271g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	119NULL	42	0	0	0	0	0 0	10.849698 0g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	118NULL	42	0	0	0	0	00.240396	10.8496980.282919g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	117NULL	42	0	0	0	0	00.003791	10.8496980.004462g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	116NULL	42	0	0	0	0	00.053606	10.8496980.063089g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	115NULL	42	0	0	0	0	00.015718	10.8496980.018499g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	112NULL	42	0	0	0	0	00.154329	10.8496980.181628g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	111NULL	42	0	0	0	0	00.163131	10.8496980.191987g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	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	25025	250250	9	100NULL	42	0	0	0	0	00.429051	10.8496980.504945g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	91NULL	42	0	0	0	0	00.022944	10.8496980.027002g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	90NULL	42	0	0	0	0	0 1783.12	10.8496982098.534g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	87NULL	42	0	0	0	0	01.374496	10.8496981.617629g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	79NULL	42	0	0	0	0	01.218527	10.8496981.434071g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	66NULL	42	0	0	0	0	00.000235	10.8496980.000277g	mi	
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	2015	1	5	7	25	25025	250250	9	58NULL	42	0	0	0	0	0 0.00066	10.8496980.000777g	mi	
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1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	56NULL	42	0	0	0	0	09.78E-05	10.8496980.000115g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	55NULL	42	0	0	0	0	00.003893	10.8496980.004582g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	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 0.000221g	mi	
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1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	36NULL	42	0	0	0	0	00.003957	10.8496980.004657g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	35NULL	42	0	0	0	0	00.001993	10.8496980.002345g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	9	31NULL	42	0							

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1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	117NULL	31	0	0	0	0	00.002259	1	10.002259g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	116NULL	31	0	0	0	0	00.013053	1	10.013053g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	115NULL	31	0	0	0	0	00.000702	1	10.000702g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	112NULL	31	0	0	0	0	00.003819	1	10.003819g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	111NULL	31	0	0	0	0	00.010396	1	10.010396g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	110NULL	31	0	0	0	0	0 0.01919	1	1 0.01919g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	107NULL	31	0	0	0	0	00.015057	1	10.015057g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	106NULL	31	0	0	0	0	00.104427	1	10.104427g	mi
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1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	66NULL	31	0	0	0	0	08.24E-05	1	18.24E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	59NULL	31	0	0	0	0	00.000316	1	10.000316g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	58NULL	31	0	0	0	0	05.86E-05	1	15.86E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	57NULL	31	0	0	0	0	0 7E-05	1	1 7E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	56NULL	31	0	0	0	0	06.35E-06	1	16.35E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	55NULL	31	0	0	0	0	00.000267	1	10.000267g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	54NULL	31	0	0	0	0	02.52E-05	1	12.52E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	53NULL	31	0	0	0	0	01.57E-05	1	11.57E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	52NULL	31	0	0	0	0	01.07E-05	1	11.07E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	51NULL	31	0	0	0	0	02.67E-05	1	12.67E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	36NULL	31	0	0	0	0	00.000491	1	10.000491g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	35NULL	31	0	0	0	0	06.12E-05	1	16.12E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	31NULL	31	0	0	0	0	00.015997	1	10.015997g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	5NULL	31	0	0	0	0	00.007421	1	10.007421g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	3NULL	31	0	0	0	0	00.418902	1	10.418902g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	2NULL	31	0	0	0	0	03.670059	1	13.670059g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	8	1NULL	31	0	0	0	0	0 0.17227	1	1 0.17227g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	122NULL	21	0	0	0	0	0 0.00261	1	1 0.00261g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	121NULL	21	0	0	0	0	00.001073	1	10.001073g	mi
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	10.019193g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	117NULL	21	0	0	0	0	00.002231	1	10.002231g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	116NULL	21	0	0	0	0	00.011707	1	10.011707g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	115NULL	21	0	0	0	0	00.000725	1	10.000725g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	112NULL	21	0	0	0	0	0 0.00327	1	1 0.00327g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	111NULL	21	0	0	0	0	00.013052	1	10.013052g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	110NULL	21	0	0	0	0	00.022463	1	10.022463g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	107NULL	21	0	0	0	0	00.014873	1	10.014873g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	106NULL	21	0	0	0	0	00.093659	1	10.093659g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	100NULL	21	0	0	0	0	0 0.02539	1	1 0.02539g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	91NULL	21	0	0	0	0	00.008243	1	10.008243g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	90NULL	21	0	0	0	0	0 625.143	1	1 625.143g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	87NULL	21	0	0	0	0	00.167207	1	10.167207g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	79NULL	21	0	0	0	0	00.158513	1	10.158513g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	66NULL	21	0	0	0	0	08.05E-05	1	18.05E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	59NULL	21	0	0	0	0	00.000428	1	10.000428g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	58NULL	21	0	0	0	0	07.59E-05	1	17.59E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	57NULL	21	0	0	0	0	0 7.6E-05	1	1 7.6E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	56NULL	21	0	0	0	0	07.98E-06	1	17.98E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	55NULL	21	0	0	0	0	00.000338	1	10.000338g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	54NULL	21	0	0	0	0	03.39E-05	1	13.39E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	53NULL	21	0	0	0	0	01.99E-05	1	11.99E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	52NULL	21	0	0	0	0	09.35E-06	1	19.35E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	51NULL	21	0	0	0	0	02.46E-05	1	12.46E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	36NULL	21	0	0	0	0	00.000651	1	10.000651g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	35NULL	21	0	0	0	0	06.77E-05	1	16.77E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	31NULL	21	0	0	0	0	00.012408	1	10.012408g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	5NULL	21	0	0	0	0	00.004563	1	10.004563g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	3NULL	21	0	0	0	0	00.306358	1	10.306358g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	2NULL	21	0	0	0	0	03.067966	1	13.067966g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	7	1NULL	21	0	0	0	0	00.163076	1	10.163076g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	122NULL	42	0	0	0	0	00.058853	10.8496980.069264g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	121NULL	42	0	0	0	0	00.021871	10.8496980.02574g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	119NULL	42	0	0	0	0	0 0	10.849698	0g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	118NULL	42	0	0	0	0	00.433913	10.8496980.510667g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	117NULL	42	0	0	0	0	00.004084	10.8496980.004807g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	116NULL	42	0	0	0	0	00.104596	10.8496980.123098g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	115NULL	42	0	0	0	0	00.028624	10.8496980.033688g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	112NULL	42	0	0	0	0	00.2			

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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	2015	1	5	7	25	25025	250250	6	79NULL	42	0	0	0	0	02.219894	10.8496982.612568g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	66NULL	42	0	0	0	0	0.000047	10.8496980.000553g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	59NULL	42	0	0	0	0	00.002682	10.8496980.003156g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	58NULL	42	0	0	0	0	00.001191	10.8496980.001401g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	57NULL	42	0	0	0	0	00.004381	10.8496980.005156g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	56NULL	42	0	0	0	0	00.000176	10.8496980.000208g	mi
1.1.2015	1	1	2015	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 0.00009	10.8496980.001059g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	51NULL	42	0	0	0	0	00.002559	10.8496980.003012g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	36NULL	42	0	0	0	0	00.007136	10.8496980.008398g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	35NULL	42	0	0	0	0	00.003593	10.8496980.004229g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	31NULL	42	0	0	0	0	0.002744	10.8496980.032294g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	5NULL	42	0	0	0	0	00.115503	10.8496980.135934g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	3NULL	42	0	0	0	0	024.50434	10.84969828.83888g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	6	2NULL	42	0	0	0	0	08.061411	10.8496989.487384g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	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	2015	1	5	7	25	25025	250250	5	118NULL	31	0	0	0	0	00.017697	1 10.017697g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	117NULL	31	0	0	0	0	00.002434	1 10.002434g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	116NULL	31	0	0	0	0	00.022643	1 10.022643g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	115NULL	31	0	0	0	0	00.000893	1 10.000893g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	112NULL	31	0	0	0	0	00.004744	1 10.004744g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	111NULL	31	0	0	0	0	00.011936	1 10.011936g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	110NULL	31	0	0	0	0	00.022441	1 10.022441g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	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	99NULL	31	0	0	0	0	00.017392	1 10.017392g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	90NULL	31	0	0	0	0	0 1319.55	1 1 1319.55g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	87NULL	31	0	0	0	0	00.271967	1 10.271967g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	79NULL	31	0	0	0	0	00.261112	1 10.261112g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	66NULL	31	0	0	0	0	00.000165	1 10.000165g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	59NULL	31	0	0	0	0	00.000339	1 10.000339g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	58NULL	31	0	0	0	0	06.55E-05	1 16.55E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	57NULL	31	0	0	0	0	08.94E-05	1 18.94E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	56NULL	31	0	0	0	0	07.28E-06	1 17.28E-06g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	55NULL	31	0	0	0	0	00.000305	1 10.000305g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	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 1.5E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	51NULL	31	0	0	0	0	03.74E-05	1 13.74E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	36NULL	31	0	0	0	0	00.000537	1 10.000537g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	35NULL	31	0	0	0	0	07.72E-05	1 17.72E-05g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	31NULL	31	0	0	0	0	00.025892	1 10.025892g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	5NULL	31	0	0	0	0	0 0.01046	1 1 0.01046g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	3NULL	31	0	0	0	0	00.502396	1 10.502396g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	2NULL	31	0	0	0	0	05.026405	1 15.026405g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	5	1NULL	31	0	0	0	0	00.271572	1 10.271572g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	122NULL	21	0	0	0	0	00.003431	1 10.003431g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	121NULL	21	0	0	0	0	0 0.00141	1 1 0.00141g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	119NULL	21	0	0	0	0	0 0 1	1 0g	mi
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	25025	250250	4	117NULL	21	0	0	0	0	00.002404	1 10.002404g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	116NULL	21	0	0	0	0	00.020168	1 10.020168g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	115NULL	21	0	0	0	0	00.000958	1 10.000958g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	112NULL	21	0	0	0	0	00.004299	1 10.004299g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	111NULL	21	0	0	0	0	00.017156	1 10.017156g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	110NULL	21	0	0	0	0	00.029531	1 10.029531g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	107NULL	21	0	0	0	0	00.016027	1 10.016027g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	106NULL	21	0	0	0	0	00.161345	1 10.161345g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	100NULL	21	0	0	0	0	0 0.03338	1 1 0.03338g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	91NULL	21	0	0	0	0	00.013459	1 10.013459g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	90NULL	21	0	0	0	0	0 1020.64	1 1 1020.64g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	87NULL	21	0	0	0	0	00.271186	1 10.271186g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	79NULL	21	0	0	0	0	00.256905	1 10.256905g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	66NULL	21	0	0	0	0	00.000161	1 10.000161g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	59NULL	21	0	0	0	0	00.000563	1 10.000563g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	4	58NULL	21	0	0	0	0	09.97E-05	1 19.97E-05g	

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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	25	25025	250250	4	36NULL	21	0	0	0	0	00.000855	1	10.000855g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	35NULL	21	0	0	0	0	0.89E-05	1	1.89E-05g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	31NULL	21	0	0	0	0	00.020259	1	10.020259g	mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	4	5NULL	21	0	0	0	0	00.006644	1	10.006644g	mi	
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	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	122NULL	42	0	0	0	0	00.262774	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	121NULL	42	0	0	0	0	0.009795	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	119NULL	42	0	0	0	0	0	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	118NULL	42	0	0	0	0	0.190432	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	117NULL	42	0	0	0	0	0	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	116NULL	42	0	0	0	0	0	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	115NULL	42	0	0	0	0	00.094536	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	112NULL	42	0	0	0	0	00.343616	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	111NULL	42	0	0	0	0	0.131387	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	110NULL	42	0	0	0	0	0.224794	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	107NULL	42	0	0	0	0	0	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	106NULL	42	0	0	0	0	0	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	100NULL	42	0	0	0	0	0.244342	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	91NULL	42	0	0	0	0	0.08503	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	90NULL	42	0	0	0	0	0.660826	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	87NULL	42	0	0	0	0	08.789015	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	79NULL	42	0	0	0	0	07.788207	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	66NULL	42	0	0	0	0	00.002351	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	59NULL	42	0	0	0	0	00.011826	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	58NULL	42	0	0	0	0	00.005311	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	57NULL	42	0	0	0	0	00.019644	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	56NULL	42	0	0	0	0	00.000787	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	55NULL	42	0	0	0	0	00.031379	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	54NULL	42	0	0	0	0	00.001109	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	53NULL	42	0	0	0	0	00.001773	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	52NULL	42	0	0	0	0	00.003707	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	51NULL	42	0	0	0	0	00.011478	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	36NULL	42	0	0	0	0	00.032044	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	35NULL	42	0	0	0	0	00.016137	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	31NULL	42	0	0	0	0	00.057384	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	5NULL	42	0	0	0	0	00.372302	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	3NULL	42	0	0	0	0	0.895673	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	2NULL	42	0	0	0	0	022.91538	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	3	1NULL	42	0	0	0	0	08.160522	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	122NULL	31	0	0	0	0	00.006382	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	121NULL	31	0	0	0	0	0.000252	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	119NULL	31	0	0	0	0	0	0	1	ONULL	g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	118NULL	31	0	0	0	0	00.048023	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	117NULL	31	0	0	0	0	0	0	1	ONULL	g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	116NULL	31	0	0	0	0	0	0	1	ONULL	g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	115NULL	31	0	0	0	0	00.003326	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	112NULL	31	0	0	0	0	00.017367	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	111NULL	31	0	0	0	0	00.031911	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	110NULL	31	0	0	0	0	0.006539	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	107NULL	31	0	0	0	0	0	0	1	ONULL	g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	106NULL	31	0	0	0	0	0	0	1	ONULL	g mi
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	100NULL	31	0	0	0	0	00.072571	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	91NULL	31	0	0	0	0	00.053554	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	90NULL	31	0	0	0	0	0.406319	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	87NULL	31	0	0	0	0	00.953498	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	79NULL	31	0	0	0	0	0.9055	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	66NULL	31	0	0	0	0	00.000824	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	59NULL	31	0	0	0	0	00.000769	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	58NULL	31	0	0	0	0	00.000165	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	57NULL	31	0	0	0	0	00.000291	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	56NULL	31	0	0	0	0	0.194E-05	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	55NULL	31	0	0	0	0	00.000802	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	54NULL	31	0	0	0	0	06.36E-05	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	53NULL	31	0	0	0	0	04.69E-05	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	52NULL	31	0	0	0	0	06.05E-05	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	51NULL	31	0	0	0	0	00.000139	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	36NULL	31	0	0	0	0	00.001281	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	35NULL	31	0	0	0	0	00.000246	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	31NULL	31	0	0	0	0	00.079694	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	5NULL	31	0	0	0	0	00.027228	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	3NULL	31	0	0	0	0	0.086416	1	ONULL	g mi	
1,1,2015	1	1	2015	1	5	7	25	25025	250250	2	2NULL	31	0	0	0	0	07.039631	1			



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1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	118NULL	21	0	0	0	0	00.085199	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	117NULL	21	0	0	0	0	0	0	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	116NULL	21	0	0	0	0	0	0	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	115NULL	21	0	0	0	0	00.003261	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	112NULL	21	0	0	0	0	00.014513	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	111NULL	21	0	0	0	0	0	0.005791	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	110NULL	21	0	0	0	0	00.099712	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	107NULL	21	0	0	0	0	0	0	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	106NULL	21	0	0	0	0	0	0	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	100NULL	21	0	0	0	0	00.112706	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	91NULL	21	0	0	0	0	00.040616	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	90NULL	21	0	0	0	0	0	3080.15	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	87NULL	21	0	0	0	0	01.077877	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	79NULL	21	0	0	0	0	01.019871	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	66NULL	21	0	0	0	0	00.000805	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	59NULL	21	0	0	0	0	00.001899	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	58NULL	21	0	0	0	0	00.000337	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	57NULL	21	0	0	0	0	00.000337	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	56NULL	21	0	0	0	0	03.54E-05	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	55NULL	21	0	0	0	0	0	0.0015	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	54NULL	21	0	0	0	0	0	0.00015	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	53NULL	21	0	0	0	0	08.85E-05	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	52NULL	21	0	0	0	0	04.18E-05	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	51NULL	21	0	0	0	0	00.000109	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	36NULL	21	0	0	0	0	00.002887	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	35NULL	21	0	0	0	0	0	0.0003	1	ONULL	g	mi
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	31NULL	21	0	0	0	0	00.061151	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	5NULL	21	0	0	0	0	00.021642	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	3NULL	21	0	0	0	0	00.583232	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	2NULL	21	0	0	0	0	07.295993	1	ONULL	g	mi	
1.1.2015	1	1	2015	1	5	7	25	25025	250250	1	1NULL	21	0	0	0	0	01.041513	1	ONULL	g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	122NULL	42	0	0	0	0	00.009855	10.8496980.011598g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	121NULL	42	0	0	0	0	00.003643	10.8496980.004287g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	119NULL	42	0	0	0	0	0	0	10.849698	0g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	118NULL	42	0	0	0	0	0	0.007481	10.8496980.088043g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	117NULL	42	0	0	0	0	00.002613	10.8496980.003075g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	116NULL	42	0	0	0	0	00.016988	10.8496980.019993g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	115NULL	42	0	0	0	0	00.006961	10.8496980.008192g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	112NULL	42	0	0	0	0	00.106015	10.8496980.124768g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	111NULL	42	0	0	0	0	00.049273	10.8496980.057989g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	110NULL	42	0	0	0	0	00.180825	10.8496980.212811g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	107NULL	42	0	0	0	0	00.017419	10.849698	0.0205g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	106NULL	42	0	0	0	0	00.135903	10.8496980.159943g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	100NULL	42	0	0	0	0	0	0.19655	10.8496980.231317g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	91NULL	42	0	0	0	0	00.012912	10.8496980.015197g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	90NULL	42	0	0	0	0	0	1003.52	10.8496981181.031g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	87NULL	42	0	0	0	0	0	0.44746	10.8496980.526611g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	79NULL	42	0	0	0	0	0	0.39744	10.8496980.467743g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	66NULL	42	0	0	0	0	0	06.72E-05	10.8496987.91E-05g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	59NULL	42	0	0	0	0	00.000459	10.849698	0.00054g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	58NULL	42	0	0	0	0	0	0	0.0002	10.8496980.000235g		mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	57NULL	42	0	0	0	0	00.000728	10.8496980.000857g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	56NULL	42	0	0	0	0	02.96E-05	10.8496983.48E-05g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	55NULL	42	0	0	0	0	00.001175	10.8496980.001382g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	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	250250	24	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	250250	24	52NULL	42	0	0	0	0	00.000171	10.8496980.000201g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	51NULL	42	0	0	0	0	00.000425	10.849698	0.0005g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	36NULL	42	0	0	0	0	00.001183	10.8496980.001392g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	35NULL	42	0	0	0	0	00.000596	10.8496980.000701g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	31NULL	42	0	0	0	0	00.008714	10.8496980.010255g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	5NULL	42	0	0	0	0	00.020736	10.8496980.024404g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	3NULL	42	0	0	0	0	04.464876	10.8496985.254662g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	2NULL	42	0	0	0	0	01.798668	10.8496982.116832g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	24	1NULL	42	0	0	0	0	00.418176	10.8496980.492147g			mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	122NULL	31	0	0	0	0	00.000515	1	10.000515g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	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	250250	23	119NULL	31	0	0	0	0	0	0	1	1	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	118NULL	31	0	0	0	0	00.003821	1	10.003821g		mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	117NULL											

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	90NULL	31	0	0	0	0	0.468512	1	1.468.512g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	87NULL	31	0	0	0	0	00.144553	1	10.144553g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	79NULL	31	0	0	0	0	00.136643	1	10.136643g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	66NULL	31	0	0	0	0	02.35E-05	1	12.35E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	59NULL	31	0	0	0	0	0.7.9E-05	1	1.7.9E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	58NULL	31	0	0	0	0	01.46E-05	1	11.46E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	57NULL	31	0	0	0	0	01.71E-05	1	11.71E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	56NULL	31	0	0	0	0	01.57E-06	1	11.57E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	55NULL	31	0	0	0	0	06.62E-05	1	16.62E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	54NULL	31	0	0	0	0	06.32E-06	1	16.32E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	53NULL	31	0	0	0	0	0.3.9E-06	1	1.3.9E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	52NULL	31	0	0	0	0	02.74E-06	1	12.74E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	51NULL	31	0	0	0	0	06.41E-06	1	16.41E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	36NULL	31	0	0	0	0	00.000122	1	10.000122g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	35NULL	31	0	0	0	0	01.49E-05	1	11.49E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	31NULL	31	0	0	0	0	00.009182	1	10.009182g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	5NULL	31	0	0	0	0	00.005548	1	10.005548g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	3NULL	31	0	0	0	0	00.285791	1	10.285791g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	2NULL	31	0	0	0	0	03.087763	1	13.087763g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	23	1NULL	31	0	0	0	0	00.142191	1	10.142191g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	122NULL	21	0	0	0	0	00.000435	1	10.000435g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	121NULL	21	0	0	0	0	00.000179	1	10.000179g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	119NULL	21	0	0	0	0	0	0	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	118NULL	21	0	0	0	0	00.003202	1	10.003202g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	117NULL	21	0	0	0	0	00.001537	1	10.001537g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	116NULL	21	0	0	0	0	00.003692	1	10.003692g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	115NULL	21	0	0	0	0	00.000122	1	10.000122g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	112NULL	21	0	0	0	0	00.000546	1	10.000546g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	111NULL	21	0	0	0	0	00.002176	1	10.002176g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	110NULL	21	0	0	0	0	00.003748	1	10.003748g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	107NULL	21	0	0	0	0	00.010247	1	10.010247g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	106NULL	21	0	0	0	0	00.029535	1	10.029535g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	100NULL	21	0	0	0	0	00.004235	1	10.004235g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	91NULL	21	0	0	0	0	00.004611	1	10.004611g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	87NULL	21	0	0	0	0	00.153542	1	10.153542g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	79NULL	21	0	0	0	0	00.141749	1	10.141749g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	66NULL	21	0	0	0	0	0.2.3E-05	1	1.2.3E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	59NULL	21	0	0	0	0	07.12E-05	1	17.12E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	58NULL	21	0	0	0	0	01.26E-05	1	11.26E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	57NULL	21	0	0	0	0	01.27E-05	1	11.27E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	56NULL	21	0	0	0	0	01.33E-06	1	11.33E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	55NULL	21	0	0	0	0	05.64E-05	1	15.64E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	54NULL	21	0	0	0	0	05.64E-06	1	15.64E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	53NULL	21	0	0	0	0	03.33E-06	1	13.33E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	52NULL	21	0	0	0	0	01.62E-06	1	11.62E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	51NULL	21	0	0	0	0	04.15E-06	1	14.15E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	36NULL	21	0	0	0	0	00.000108	1	10.000108g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	35NULL	21	0	0	0	0	01.13E-05	1	11.13E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	31NULL	21	0	0	0	0	00.006941	1	10.006941g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	5NULL	21	0	0	0	0	00.003071	1	10.003071g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	3NULL	21	0	0	0	0	00.194275	1	10.194275g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	2NULL	21	0	0	0	0	02.429258	1	12.429258g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	22	1NULL	21	0	0	0	0	00.144821	1	10.144821g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	122NULL	42	0	0	0	0	00.010268	10.8496980.012085g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	121NULL	42	0	0	0	0	00.003798	10.8496980.004469g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	119NULL	42	0	0	0	0	0	0	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	118NULL	42	0	0	0	0	00.077746	10.8496980.091499g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	117NULL	42	0	0	0	0	00.002814	10.8496980.003312g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	116NULL	42	0	0	0	0	00.020932	10.8496980.024635g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	115NULL	42	0	0	0	0	00.007048	10.8496980.008295g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	112NULL	42	0	0	0	0	0.0.10499	10.8496980.123562g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	111NULL	42	0	0	0	0	00.051342	10.8496980.060423g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	110NULL	42	0	0	0	0	00.182737	10.8496980.215061g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	107NULL	42	0	0	0	0	00.018761	10.849698.0.02208g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	106NULL	42	0	0	0	0	00.167459	10.8496980.197081g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	100NULL	42	0	0	0	0	00.198627	10.8496980.233762g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	91NULL	42	0	0	0	0	00.013452	10.8496980.015832g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	90NULL	42	0	0	0	0	0.1045.46	10.849698.1230.39g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	87NULL	42	0	0	0	0	00.505631	10.8496980.595072g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	79NULL	42	0	0	0	0	00.448952	10.8496980.5283		

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	52NULL	42	0	0	0	0	00.000176	10.8496980.000207g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	51NULL	42	0	0	0	0	00.000443	10.8496980.000522g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	36NULL	42	0	0	0	0	00.001234	10.8496980.001452g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	3NULL	42	0	0	0	0	04.736675	10.8496985.574539g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	2NULL	42	0	0	0	0	01.935401	10.8496982.277751g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	21	1NULL	42	0	0	0	0	00.472438	10.8496980.556008g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	122NULL	31	0	0	0	0	00.000563	1 10.000563g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	119NULL	31	0	0	0	0	0 0 0 1	1 0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	118NULL	31	0	0	0	0	00.004173	1 10.004173g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	117NULL	31	0	0	0	0	00.001677	1 10.001677g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	116NULL	31	0	0	0	0	00.005532	1 10.005532g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	115NULL	31	0	0	0	0	00.000202	1 10.000202g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	112NULL	31	0	0	0	0	00.001396	1 10.001396g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	111NULL	31	0	0	0	0	00.002815	1 10.002815g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	110NULL	31	0	0	0	0	00.005569	1 10.005569g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	107NULL	31	0	0	0	0	00.011177	1 10.011177g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	106NULL	31	0	0	0	0	00.044259	1 10.044259g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	100NULL	31	0	0	0	0	00.006242	1 10.006242g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	87NULL	31	0	0	0	0	0 0.15216	1 1 0.15216g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	66NULL	31	0	0	0	0	02.75E-05	1 12.75E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	59NULL	31	0	0	0	0	08.56E-05	1 18.56E-05g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	55NULL	31	0	0	0	0	07.23E-05	1 17.23E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	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	25	25025	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	25025	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	25025	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	25025	250250	20	36NULL	31	0	0	0	0	00.000133	1 10.000133g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	35NULL	31	0	0	0	0	01.65E-05	1 11.65E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	31NULL	31	0	0	0	0	00.009695	1 10.009695g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	5NULL	31	0	0	0	0	00.005913	1 10.005913g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	3NULL	31	0	0	0	0	00.287515	1 10.287515g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	2NULL	31	0	0	0	0	03.289238	1 13.289238g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	20	1NULL	31	0	0	0	0	00.150061	1 10.150061g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	122NULL	21	0	0	0	0	00.000472	1 10.000472g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	121NULL	21	0	0	0	0	00.000194	1 10.000194g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	119NULL	21	0	0	0	0	0 0 0 1	1 0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	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	25025	250250	19	117NULL	21	0	0	0	0	00.001656	1 10.001656g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	116NULL	21	0	0	0	0	00.004936	1 10.004936g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	115NULL	21	0	0	0	0	00.000133	1 10.000133g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	111NULL	21	0	0	0	0	00.002359	1 10.002359g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	110NULL	21	0	0	0	0	00.004062	1 10.004062g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	100NULL	21	0	0	0	0	0 0.00459	1 1 0.00459g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	91NULL	21	0	0	0	0	00.004908	1 10.004908g	mi
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	53NULL	21	0	0	0	0	0 3.6E-06	1 1 3.6E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	52NULL	21	0	0	0	0	01.76E-06	1 11.76E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	51NULL	21	0	0	0	0	0 4.5E-06	1 1 4.5E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	36NULL	21	0	0	0	0	00.000117	1 10.000117g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	19	35NULL	21	0	0	0	0	01.23E-05	1 11.23E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025											

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	119NULL	42	0	0	0	0	0	0	10.849698	0g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	118NULL	42	0	0	0	0	0.008913	10.8496980.104896g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	117NULL	42	0	0	0	0	0.0003033	10.8496980.003569g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	116NULL	42	0	0	0	0	0.002313	10.8496980.027221g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	115NULL	42	0	0	0	0	0.0007323	10.8496980.008618g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	112NULL	42	0	0	0	0	0.0098904	10.849698	0.1164g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	111NULL	42	0	0	0	0	0.0059404	10.8496980.069912g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	110NULL	42	0	0	0	0	0.0188034	10.8496980.221295g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	107NULL	42	0	0	0	0	0.0020217	10.8496980.023794g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	106NULL	42	0	0	0	0	0.0185036	10.8496980.217767g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	100NULL	42	0	0	0	0	0.0204385	10.8496980.240538g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	91NULL	42	0	0	0	0	0.0013344	10.8496980.015704g			mi			
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	87NULL	42	0	0	0	0	0.0562511	10.8496980.662013g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	79NULL	42	0	0	0	0	0.0499255	10.8496980.005767g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	66NULL	42	0	0	0	0	0.94E-05	10.8496980.000111g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	59NULL	42	0	0	0	0	0.0000548	10.8496980.000645g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	58NULL	42	0	0	0	0	0.0000241	10.8496980.000283g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	57NULL	42	0	0	0	0	0.0000881	10.8496980.001036g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	56NULL	42	0	0	0	0	0.357E-05	10.849698	4.2E-05g		mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	55NULL	42	0	0	0	0	0.0001417	10.8496980.001667g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	54NULL	42	0	0	0	0	0.538E-05	10.8496986.33E-05g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	53NULL	42	0	0	0	0	0.807E-05	10.849698	9.5E-05g		mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	52NULL	42	0	0	0	0	0.0000196	10.8496980.000231g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	51NULL	42	0	0	0	0	0.0000514	10.8496980.000605g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	36NULL	42	0	0	0	0	0.0001432	10.8496980.001685g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	35NULL	42	0	0	0	0	0.0000721	10.8496980.000849g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	31NULL	42	0	0	0	0	0.0009005	10.8496980.010597g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	5NULL	42	0	0	0	0	0.0026002	10.8496980.030601g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	3NULL	42	0	0	0	0	0.4976171	10.849698	5.8564g		mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	2NULL	42	0	0	0	0	0.2031828	10.8496982.391235g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	18	1NULL	42	0	0	0	0	0.0525257	10.8496980.618169g			mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	122NULL	31	0	0	0	0	0.0000631	1	10.000631g		mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	121NULL	31	0	0	0	0	0.0000256	1	10.000256g		mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	119NULL	31	0	0	0	0	0	0	0	0	1	1	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	118NULL	31	0	0	0	0	0.0004684	1	10.004684g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	117NULL	31	0	0	0	0	0.0001806	1	10.001806g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	116NULL	31	0	0	0	0	0.0007326	1	10.007326g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	115NULL	31	0	0	0	0	0.0000231	1	10.000231g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	112NULL	31	0	0	0	0	0.0001604	1	10.001604g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	111NULL	31	0	0	0	0	0.0003157	1	10.003157g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	110NULL	31	0	0	0	0	0.0006288	1	10.006288g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	107NULL	31	0	0	0	0	0.001204	1	10.01204g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	106NULL	31	0	0	0	0	0.0058606	1	10.058606g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	100NULL	31	0	0	0	0	0.0007044	1	10.007044g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	91NULL	31	0	0	0	0	0.0007318	1	10.007318g			mi		
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	87NULL	31	0	0	0	0	0.0162804	1	10.162804g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	79NULL	31	0	0	0	0	0.0154494	1	10.154494g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	66NULL	31	0	0	0	0	0.329E-05	1	13.29E-05g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	59NULL	31	0	0	0	0	0.953E-05	1	19.53E-05g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	58NULL	31	0	0	0	0	0.177E-05	1	11.77E-05g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	57NULL	31	0	0	0	0	0.215E-05	1	12.15E-05g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	56NULL	31	0	0	0	0	0.193E-06	1	11.93E-06g			mi		
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	53NULL	31	0	0	0	0	0.477E-06	1	14.77E-06g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	52NULL	31	0	0	0	0	0.353E-06	1	13.53E-06g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	51NULL	31	0	0	0	0	0.83E-06	1	1.83E-06g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	36NULL	31	0	0	0	0	0.0000148	1	10.000148g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	35NULL	31	0	0	0	0	0.188E-05	1	11.88E-05g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	31NULL	31	0	0	0	0	0.001088	1	1.001088g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	5NULL	31	0	0	0	0	0.0006345	1	10.006345g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	3NULL	31	0	0	0	0	0.0312439	1	10.312439g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	2NULL	31	0	0	0	0	0.3456769	1	13.456769g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	17	1NULL	31	0	0	0	0	0.0160839	1	10.160839g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	122NULL	21	0	0	0	0	0.000051	1	1.000051g			mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	121NULL	21	0											

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	91NULL	21	0	0	0	0	0.005499	1	10.005499g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	90NULL	21	0	0	0	0	0.417.042	1	1.417.042g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	87NULL	21	0	0	0	0	00.170023	1	10.170023g	mi
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
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	66NULL	21	0	0	0	0	03.22E-05	1	13.22E-05g	mi
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
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	57NULL	21	0	0	0	0	01.49E-05	1	11.49E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	56NULL	21	0	0	0	0	01.56E-06	1	11.56E-06g	mi
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	0.3.9E-06	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	0.1.9E-06	1	1.1.9E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	51NULL	21	0	0	0	0	04.86E-06	1	14.86E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	39NULL	21	0	0	0	0	00.000127	1	10.000127g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	35NULL	21	0	0	0	0	01.33E-05	1	11.33E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	31NULL	21	0	0	0	0	00.008277	1	10.008277g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	5NULL	21	0	0	0	0	00.003587	1	10.003587g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	3NULL	21	0	0	0	0	00.225828	1	10.225828g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	2NULL	21	0	0	0	0	02.828672	1	12.828672g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	16	1NULL	21	0	0	0	0	0.0.16108	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	0.0	10.849698	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
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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	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	110NULL	42	0	0	0	0	0.1.9598	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	
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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	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	57NULL	42	0	0	0	0	00.001063	10.849698.000125g	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	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	7	5	16	25	25025	250250	15	52NULL	42	0	0	0	0	00.000226	10.8496980.000266g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	51NULL	42	0	0	0	0	00.000621	10.849698.0.00073g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	36NULL	42	0	0	0	0	0.000173	10.8496980.002035g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	35NULL	42	0	0	0	0	00.000871	10.8496980.001025g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	3NULL	42	0	0	0	0	0.5.33542	10.8496986.279196g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	15	2NULL	42	0	0	0	0	02.176459	10.849698.2.56145g	mi	
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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	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						

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	53NULL	31	0	0	0	0	05.94E-06	1	15.94E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	52NULL	31	0	0	0	0	04.46E-06	1	14.46E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	51NULL	31	0	0	0	0	01.06E-05	1	11.06E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	36NULL	31	0	0	0	0	00.000183	1	10.000183g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	35NULL	31	0	0	0	0	02.37E-05	1	12.37E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	31NULL	31	0	0	0	0	00.012174	1	10.012174g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	5NULL	31	0	0	0	0	00.007125	1	10.007125g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	3NULL	31	0	0	0	0	00.332319	1	10.332319g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	2NULL	31	0	0	0	0	04.159496	1	14.159496g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	14	1NULL	31	0	0	0	0	00.176061	1	10.176061g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	122NULL	21	0	0	0	0	0 0.00064	1	1 0.00064g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	121NULL	21	0	0	0	0	00.000263	1	10.000263g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	119NULL	21	0	0	0	0	0 0 0 1 1	0g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	118NULL	21	0	0	0	0	00.004708	1	10.004708g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	117NULL	21	0	0	0	0	00.001922	1	10.001922g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	116NULL	21	0	0	0	0	00.007455	1	10.007455g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	115NULL	21	0	0	0	0	0 0.00018	1	1 0.00018g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	112NULL	21	0	0	0	0	00.000803	1	10.000803g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	111NULL	21	0	0	0	0	00.003201	1	10.003201g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	110NULL	21	0	0	0	0	00.005511	1	10.005511g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	107NULL	21	0	0	0	0	00.012813	1	10.012813g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	106NULL	21	0	0	0	0	00.059643	1	10.059643g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	100NULL	21	0	0	0	0	00.006228	1	10.006228g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	91NULL	21	0	0	0	0	00.006212	1	10.006212g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	90NULL	21	0	0	0	0	0 471.09	1	1 471.09g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	87NULL	21	0	0	0	0	00.183692	1	10.183692g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	79NULL	21	0	0	0	0	00.170601	1	10.170601g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	66NULL	21	0	0	0	0	04.03E-05	1	14.03E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	59NULL	21	0	0	0	0	00.000105	1	10.000105g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	58NULL	21	0	0	0	0	01.86E-05	1	11.86E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	57NULL	21	0	0	0	0	01.87E-05	1	11.87E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	56NULL	21	0	0	0	0	01.96E-06	1	11.96E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	55NULL	21	0	0	0	0	08.29E-05	1	18.29E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	54NULL	21	0	0	0	0	08.29E-06	1	18.29E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	53NULL	21	0	0	0	0	04.89E-06	1	14.89E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	52NULL	21	0	0	0	0	02.38E-06	1	12.38E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	51NULL	21	0	0	0	0	06.09E-06	1	16.09E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	36NULL	21	0	0	0	0	00.000159	1	10.000159g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	35NULL	21	0	0	0	0	01.67E-05	1	11.67E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	31NULL	21	0	0	0	0	0 0.00935	1	1 0.00935g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	5NULL	21	0	0	0	0	00.004115	1	10.004115g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	3NULL	21	0	0	0	0	0 0.23999	1	1 0.23999g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	2NULL	21	0	0	0	0	03.402255	1	13.402255g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	13	1NULL	21	0	0	0	0	00.174717	1	10.174717g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	122NULL	42	0	0	0	0	00.018331	10.8496980.021574g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	121NULL	42	0	0	0	0	00.006817	10.8496980.008022g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	119NULL	42	0	0	0	0	0 0	10.849698	0g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	117NULL	42	0	0	0	0	00.003519	10.8496980.004142g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	116NULL	42	0	0	0	0	00.031918	10.8496980.037564g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	115NULL	42	0	0	0	0	00.008422	10.8496980.009912g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	112NULL	42	0	0	0	0	00.074561	10.849698	0.08775g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	111NULL	42	0	0	0	0	00.091656	10.8496980.107869g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	110NULL	42	0	0	0	0	00.209222	10.8496980.246231g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	107NULL	42	0	0	0	0	00.023463	10.8496980.027613g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	106NULL	42	0	0	0	0	00.255344	10.8496980.300511g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	100NULL	42	0	0	0	0	00.227416	10.8496980.267643g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	91NULL	42	0	0	0	0	00.012909	10.8496980.015193g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	90NULL	42	0	0	0	0	0 1003.26	10.8496981180.725g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	87NULL	42	0	0	0	0	00.790034	10.8496980.929783g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	79NULL	42	0	0	0	0	00.700473	10.8496980.824379g	mi		
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	57NULL	42	0	0	0	0	00.001366	10.8496980.001607g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	56NULL	42	0	0	0	0	05.49E-05	10.8496986.46E-05g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	55NULL	42	0	0	0	0	00.002188	10.8496980.002575g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	54NULL	42	0	0	0	0	07.95E-05	10.8496989.36E-05g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	53NULL	42	0	0	0	0	00.000124	10.8496980.000146g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	12	52NULL	42	0	0	0	0	00.000276	10.8496980.000324g	mi		
2.1.2015</																					

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	121NULL	31	0	0	0	0	0.00036	1	1	0.00036g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	119NULL	31	0	0	0	0	0	0	1	1	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	118NULL	31	0	0	0	0	0.0006612	1	1	0.0006612g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	116NULL	31	0	0	0	0	0.0009857	1	1	0.0009857g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	115NULL	31	0	0	0	0	0.0000333	1	1	0.0000333g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	112NULL	31	0	0	0	0	0.0002152	1	1	0.0002152g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	111NULL	31	0	0	0	0	0.0004456	1	1	0.0004456g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	110NULL	31	0	0	0	0	0.0008764	1	1	0.0008764g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	107NULL	31	0	0	0	0	0.0013977	1	1	0.0013977g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	100NULL	31	0	0	0	0	0.0009808	1	1	0.0009808g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	91NULL	31	0	0	0	0	0.0009524	1	1	0.0009524g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	90NULL	31	0	0	0	0	0.722.633	1	1	1.722.633g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	87NULL	31	0	0	0	0	0.00197714	1	1	0.00197714g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	66NULL	31	0	0	0	0	0.549E-05	1	1	15.49E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	59NULL	31	0	0	0	0	0.000013	1	1	0.000013g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	58NULL	31	0	0	0	0	0.247E-05	1	1	12.47E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	57NULL	31	0	0	0	0	0.3.2E-05	1	1	1.3.2E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	56NULL	31	0	0	0	0	0.2.72E-06	1	1	12.72E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	55NULL	31	0	0	0	0	0.0000114	1	1	0.0000114g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	54NULL	31	0	0	0	0	0.1.05E-05	1	1	11.05E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	53NULL	31	0	0	0	0	0.6.7E-06	1	1	1.6.7E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	52NULL	31	0	0	0	0	0.5.39E-06	1	1	15.39E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	51NULL	31	0	0	0	0	0.1.29E-05	1	1	11.29E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	36NULL	31	0	0	0	0	0.0000204	1	1	0.0000204g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	35NULL	31	0	0	0	0	0.2.77E-05	1	1	12.77E-05g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	5NULL	31	0	0	0	0	0.0007874	1	1	10.007874g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	11	1NULL	31	0	0	0	0	0.0196102	1	1	10.196102g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	122NULL	21	0	0	0	0	0.0000735	1	1	10.0000735g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	121NULL	21	0	0	0	0	0.0000302	1	1	10.0000302g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	119NULL	21	0	0	0	0	0	0	1	1	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	118NULL	21	0	0	0	0	0.0005407	1	1	10.005407g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	117NULL	21	0	0	0	0	0.0002071	1	1	10.0002071g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	116NULL	21	0	0	0	0	0.0008887	1	1	10.0008887g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	115NULL	21	0	0	0	0	0.0000206	1	1	10.0000206g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	112NULL	21	0	0	0	0	0.0000922	1	1	10.0000922g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	111NULL	21	0	0	0	0	0.0003676	1	1	10.0003676g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	107NULL	21	0	0	0	0	0.0013807	1	1	10.0013807g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	106NULL	21	0	0	0	0	0.0071098	1	1	10.0071098g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	100NULL	21	0	0	0	0	0.0007152	1	1	10.0007152g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	91NULL	21	0	0	0	0	0.0007276	1	1	10.0007276g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	90NULL	21	0	0	0	0	0.551.79	1	1	1.551.79g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	87NULL	21	0	0	0	0	0.203206	1	1	10.203206g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	79NULL	21	0	0	0	0	0.00189125	1	1	10.00189125g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	66NULL	21	0	0	0	0	0.5.37E-05	1	1	15.37E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	59NULL	21	0	0	0	0	0.000012	1	1	1.000012g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	58NULL	21	0	0	0	0	0.2.14E-05	1	1	12.14E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	57NULL	21	0	0	0	0	0.2.15E-05	1	1	12.15E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	56NULL	21	0	0	0	0	0.2.25E-06	1	1	12.25E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	55NULL	21	0	0	0	0	0.9.52E-05	1	1	19.52E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	54NULL	21	0	0	0	0	0.9.53E-06	1	1	19.53E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	53NULL	21	0	0	0	0	0.5.62E-06	1	1	15.62E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	52NULL	21	0	0	0	0	0.2.73E-06	1	1	12.73E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	51NULL	21	0	0	0	0	0.6.99E-06	1	1	16.99E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	36NULL	21	0	0	0	0	0.0000183	1	1	10.0000183g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	35NULL	21	0	0	0	0	0.1.91E-05	1	1	11.91E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	31NULL	21	0	0	0	0	0.0010952	1	1	10.0010952g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	5NULL	21	0	0	0	0	0.0004613	1	1	10.0004613g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	3NULL	21	0	0	0	0	0.0257899	1	1	10.257899g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	2NULL	21	0	0	0	0	0.3.8374	1	1	3.8374g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	10	1NULL	21	0	0	0	0	0.0193738	1	1	10.193738g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	122NULL	42	0	0	0	0	0.032626	10.8496980.038397g				mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9</												

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	100NULL	42	0	0	0	0	0.429051	10.8496980.504945g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	91NULL	42	0	0	0	0	00.025897	10.8496980.030478g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	90NULL	42	0	0	0	0	0.2012.62	10.849698 2368.63g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	87NULL	42	0	0	0	0	01.378036	10.8496981.621795g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	79NULL	42	0	0	0	0	01.222067	10.8496981.438237g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	66NULL	42	0	0	0	0	00.000235	10.8496980.000277g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	59NULL	42	0	0	0	0	00.001486	10.8496980.001749g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	58NULL	42	0	0	0	0	0.0.00066	10.8496980.000777g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	57NULL	42	0	0	0	0	00.002429	10.8496980.002859g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	56NULL	42	0	0	0	0	09.78E-05	10.8496980.000115g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	55NULL	42	0	0	0	0	00.003893	10.8496980.004582g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	54NULL	42	0	0	0	0	00.000142	10.8496980.000168g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	53NULL	42	0	0	0	0	00.000221	10.849698 0.00026g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	52NULL	42	0	0	0	0	00.000497	10.8496980.000585g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	51NULL	42	0	0	0	0	00.001419	10.849698 0.00167g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	36NULL	42	0	0	0	0	00.003957	10.8496980.004657g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	35NULL	42	0	0	0	0	00.001993	10.8496980.002345g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	31NULL	42	0	0	0	0	00.017476	10.8496980.020567g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	5NULL	42	0	0	0	0	00.064633	10.8496980.076066g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	3NULL	42	0	0	0	0	010.54976	10.84969812.41589g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	2NULL	42	0	0	0	0	04.464046	10.8496985.253685g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	9	1NULL	42	0	0	0	0	01.286705	10.8496981.514309g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	122NULL	31	0	0	0	0	00.001008	1 10.001008g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	121NULL	31	0	0	0	0	00.000405	1 10.000405g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	119NULL	31	0	0	0	0	0 0 1 1	0g mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	118NULL	31	0	0	0	0	00.007491	1 10.007491g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	117NULL	31	0	0	0	0	00.002259	1 10.002259g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	116NULL	31	0	0	0	0	00.013053	1 10.013053g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	115NULL	31	0	0	0	0	00.000401	1 10.000401g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	112NULL	31	0	0	0	0	00.002478	1 10.002478g	mi
2.1.2015	2	1	2015	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	2015	7	5	16	25	25025	250250	8	110NULL	31	0	0	0	0	0.0.00997g	1 1.0.00997g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	107NULL	31	0	0	0	0	00.015057	1 10.015057g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	106NULL	31	0	0	0	0	00.104427	1 10.104427g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	100NULL	31	0	0	0	0	00.011133	1 10.011133g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	91NULL	31	0	0	0	0	00.012133	1 10.012133g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	90NULL	31	0	0	0	0	0.920.552	1 1.920.552g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	87NULL	31	0	0	0	0	00.235213	1 10.235213g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	79NULL	31	0	0	0	0	00.223961	1 10.223961g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	66NULL	31	0	0	0	0	08.24E-05	1 18.24E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	59NULL	31	0	0	0	0	0.0.00014	1 1.0.00014g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	58NULL	31	0	0	0	0	02.74E-05	1 12.74E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	57NULL	31	0	0	0	0	03.89E-05	1 13.89E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	56NULL	31	0	0	0	0	03.07E-06	1 13.07E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	55NULL	31	0	0	0	0	00.000128	1 10.000128g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	54NULL	31	0	0	0	0	01.13E-05	1 11.13E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	53NULL	31	0	0	0	0	07.53E-06	1 17.53E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	52NULL	31	0	0	0	0	0.6.9E-06	1 1.6.9E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	51NULL	31	0	0	0	0	01.66E-05	1 11.66E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	36NULL	31	0	0	0	0	00.000223	1 10.000223g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	35NULL	31	0	0	0	0	03.34E-05	1 13.34E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	31NULL	31	0	0	0	0	00.018053	1 10.018053g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	5NULL	31	0	0	0	0	00.009044	1 10.009044g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	3NULL	31	0	0	0	0	00.414301	1 10.414301g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	2NULL	31	0	0	0	0	05.268094	1 15.268094g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	8	1NULL	31	0	0	0	0	00.233005	1 10.233005g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	122NULL	21	0	0	0	0	00.000853	1 10.000853g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	121NULL	21	0	0	0	0	0.0.00035	1 1.0.00035g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	119NULL	21	0	0	0	0	0 0 1 1	0g mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	118NULL	21	0	0	0	0	00.006273	1 10.006273g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	117NULL	21	0	0	0	0	00.002231	1 10.002231g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	116NULL	21	0	0	0	0	00.011707	1 10.011707g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	115NULL	21	0	0	0	0	0.0.00024	1 1.0.00024g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	112NULL	21	0	0	0	0	0.0.00107	1 1.0.00107g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	111NULL	21	0	0	0	0	00.004264	1 10.004264g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	110NULL	21	0	0	0	0	00.007343	1 10.007343g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	107NULL	21	0	0	0	0	00.014873	1 10.014873g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	106NULL	21	0	0	0	0	00.093659	1 10.093659g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	100NULL	21	0	0	0	0	00.008298	1 10.008298g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	91NULL	21	0	0	0	0	00.009331	1 10.009331g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	90NULL	21	0	0	0	0	0.707.596	1 1.707.596g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	87NULL	21	0	0	0	0	00.240286	1 10.240286g	mi
2.1.2015	2	1	2015	7	5	16	25												



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2.1.2015	2	1	2015	7	5	16	25	25025	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	25025	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	25025	250250	7	52NULL	21	0	0	0	0	03.17E-06	1	13.17E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	51NULL	21	0	0	0	0	0 8.1E-06	1	1 8.1E-06g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	36NULL	21	0	0	0	0	00.000212	1	10.000212g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	35NULL	21	0	0	0	0	02.22E-05	1	12.22E-05g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	31NULL	21	0	0	0	0	00.014045	1	10.014045g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	5NULL	21	0	0	0	0	0 0.00538	1	1 0.00538g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	3NULL	21	0	0	0	0	00.290322	1	10.290322g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	2NULL	21	0	0	0	0	04.397225	1	14.397225g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	7	1NULL	21	0	0	0	0	00.229571	1	10.229571g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	122NULL	42	0	0	0	0	00.058853	10.8496980.069264g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	121NULL	42	0	0	0	0	00.021871	10.849698 0.02574g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	119NULL	42	0	0	0	0	0 0	10.849698 0g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	118NULL	42	0	0	0	0	00.433913	10.8496980.510667g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	117NULL	42	0	0	0	0	00.004084	10.8496980.004807g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	116NULL	42	0	0	0	0	00.104596	10.8496980.123098g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	115NULL	42	0	0	0	0	00.028624	10.8496980.033688g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	112NULL	42	0	0	0	0	00.283879	10.8496980.334094g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	111NULL	42	0	0	0	0	00.294267	10.849698 0.34632g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	110NULL	42	0	0	0	0	00.717792	10.8496980.844761g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	107NULL	42	0	0	0	0	0 0.02723	10.8496980.032047g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	106NULL	42	0	0	0	0	00.836766	10.849698 0.98478g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	91NULL	42	0	0	0	0	00.045955	10.8496980.054083g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	90NULL	42	0	0	0	0	0 3571.43	10.8496984203.176g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	87NULL	42	0	0	0	0	02.510257	10.8496982.918221g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	79NULL	42	0	0	0	0	02.226244	10.8496982.620042g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	66NULL	42	0	0	0	0	0 0.00047	10.8496980.000553g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	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	25	25025	250250	6	53NULL	42	0	0	0	0	00.000398	10.8496980.000469g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	52NULL	42	0	0	0	0	0 0.0009	10.8496980.001059g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	51NULL	42	0	0	0	0	00.002559	10.8496980.003012g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	36NULL	42	0	0	0	0	00.007136	10.8496980.008398g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	35NULL	42	0	0	0	0	00.003593	10.8496980.004229g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	31NULL	42	0	0	0	0	00.031011	10.8496980.036496g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	5NULL	42	0	0	0	0	00.115503	10.8496980.135934g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	3NULL	42	0	0	0	0	019.55379	10.84969823.01264g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	2NULL	42	0	0	0	0	08.061411	10.8496989.487384g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	6	1NULL	42	0	0	0	0	02.341737	10.8496982.755964g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	122NULL	31	0	0	0	0	00.001359	1 10.001359g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	121NULL	31	0	0	0	0	0 0.00054	1 1 0.00054g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	119NULL	31	0	0	0	0	0 0 0	1 1 0g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	118NULL	31	0	0	0	0	0 0.01013	1 1 0.01013g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	117NULL	31	0	0	0	0	00.002434	1 10.002434g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	116NULL	31	0	0	0	0	00.022643	1 10.022643g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	115NULL	31	0	0	0	0	00.000602	1 10.000602g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	112NULL	31	0	0	0	0	00.003457	1 10.003457g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	111NULL	31	0	0	0	0	00.006794	1 10.006794g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	110NULL	31	0	0	0	0	00.013587	1 10.013587g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	107NULL	31	0	0	0	0	00.016225	1 10.016225g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	106NULL	31	0	0	0	0	00.181144	1 10.181144g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	100NULL	31	0	0	0	0	00.015109	1 10.015109g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	91NULL	31	0	0	0	0	00.019959	1 10.019959g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	90NULL	31	0	0	0	0	0 1514.3	1 1 1514.3g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	87NULL	31	0	0	0	0	00.347708	1 10.347708g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	79NULL	31	0	0	0	0	0 0.33116	1 1 0.33116g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	59NULL	31	0	0	0	0	0 0.00017	1 1 0.00017g	mi	
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	57NULL	31	0	0	0	0	05.95E-05	1 15.95E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	56NULL	31	0	0	0	0	04.13E-06	1 14.13E-06g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	55NULL	31	0	0	0	0	00.000171	1 10.000171g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	54NULL	31	0	0	0	0	01.39E-05	1 11.39E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	5	53NULL	31	0	0	0	0	0 1E-05	1 1 1E-05g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	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	25	25025	250250	5	51NULL	31	0	0	0					

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2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	122NULL	21	0	0	0	0	00.001206	1	10.001206g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	121NULL	21	0	0	0	0	00.000495	1	10.000495g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	119NULL	21	0	0	0	0	0	0	0	0	1	1	0g	mi
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	118NULL	21	0	0	0	0	00.008872	1	10.008872g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	117NULL	21	0	0	0	0	00.002404	1	10.002404g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	116NULL	21	0	0	0	0	00.020168	1	10.020168g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	115NULL	21	0	0	0	0	00.000341	1	10.000341g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	112NULL	21	0	0	0	0	00.001513	1	10.001513g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	111NULL	21	0	0	0	0	0.000603	1	1.000603g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	110NULL	21	0	0	0	0	00.010384	1	10.010384g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	107NULL	21	0	0	0	0	00.016027	1	10.016027g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	106NULL	21	0	0	0	0	00.161345	1	10.161345g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	100NULL	21	0	0	0	0	00.011736	1	10.011736g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	91NULL	21	0	0	0	0	00.015494	1	10.015494g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	90NULL	21	0	0	0	0	0.1175.01	1	1.1175.01g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	87NULL	21	0	0	0	0	00.351526	1	10.351526g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	79NULL	21	0	0	0	0	00.329388	1	10.329388g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	66NULL	21	0	0	0	0	00.000161	1	10.000161g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	59NULL	21	0	0	0	0	00.000197	1	10.000197g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	58NULL	21	0	0	0	0	0.3.5E-05	1	1.3.5E-05g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	57NULL	21	0	0	0	0	03.52E-05	1	13.52E-05g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	56NULL	21	0	0	0	0	03.69E-06	1	13.69E-06g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	55NULL	21	0	0	0	0	00.000156	1	10.000156g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	54NULL	21	0	0	0	0	01.56E-05	1	11.56E-05g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	53NULL	21	0	0	0	0	09.22E-06	1	19.22E-06g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	52NULL	21	0	0	0	0	0.4.5E-06	1	1.4.5E-06g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	51NULL	21	0	0	0	0	01.14E-05	1	11.14E-05g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	36NULL	21	0	0	0	0	0.0003	1	1.0003g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	35NULL	21	0	0	0	0	03.14E-05	1	13.14E-05g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	31NULL	21	0	0	0	0	00.023323	1	10.023323g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	5NULL	21	0	0	0	0	00.007682	1	10.007682g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	3NULL	21	0	0	0	0	00.387587	1	10.387587g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	2NULL	21	0	0	0	0	06.076692	1	16.076692g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	4	1NULL	21	0	0	0	0	0.33707	1	10.33707g	mi				
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	122NULL	42	0	0	0	0	00.262774	1	0NULL	g	mi			
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	118NULL	42	0	0	0	0	0.1.90432	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	117NULL	42	0	0	0	0	0	0	0	1	0NULL	g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	116NULL	42	0	0	0	0	0	0	1	0NULL	g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	115NULL	42	0	0	0	0	00.094536	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	112NULL	42	0	0	0	0	00.343616	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	111NULL	42	0	0	0	0	0.1.31387	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	110NULL	42	0	0	0	0	0.2.24794	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	107NULL	42	0	0	0	0	0	0	0	1	0NULL	g	mi	
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	106NULL	42	0	0	0	0	0	0	1	0NULL	g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	100NULL	42	0	0	0	0	0.2.44342	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	91NULL	42	0	0	0	0	00.101293	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	90NULL	42	0	0	0	0	0.7872.19	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	87NULL	42	0	0	0	0	08.808515	1	0NULL	g	mi			
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	66NULL	42	0	0	0	0	00.002351	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	59NULL	42	0	0	0	0	00.011826	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	58NULL	42	0	0	0	0	00.005311	1	0NULL	g	mi			
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	56NULL	42	0	0	0	0	00.000787	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	55NULL	42	0	0	0	0	00.031379	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	54NULL	42	0	0	0	0	00.001109	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	53NULL	42	0	0	0	0	00.001773	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	52NULL	42	0	0	0	0	00.003707	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	51NULL	42	0	0	0	0	00.011478	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	36NULL	42	0	0	0	0	00.032044	1	0NULL	g	mi			
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	31NULL	42	0	0	0	0	00.068352	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	5NULL	42	0	0	0	0	00.372302	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	3NULL	42	0	0	0	0	071.47217	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	2NULL	42	0	0	0	0	022.91538	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	3	1NULL	42	0	0	0	0	08.180024	1	0NULL	g	mi			
2.1.2015	2	1	2015	7	5	16	25	25025	250250	2	122NULL	31	0	0	0	0	00.004681	1	0NULL	g	mi			
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2.1.2015	2	1	2015	7	5	16	25	25025	250250	2	119NULL	31	0	0	0	0	0	0	1	0NULL	g	mi		
2.1.2015	2	1	2015	7	5	16	25	25025	250250	2	118NULL	31	0	0	0	0								

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2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	106NULL	31	0	0	0	0	0	0	1	ONULL	g	mi
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	100NULL	31	0	0	0	0	0.055998	1	ONULL	g	mi	
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2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	87NULL	31	0	0	0	0	0.1075059	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	79NULL	31	0	0	0	0	0.1.01788	1	ONULL	g	mi	
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2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	59NULL	31	0	0	0	0	0.000049	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	58NULL	31	0	0	0	0	00.000115	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	57NULL	31	0	0	0	0	00.000242	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	56NULL	31	0	0	0	0	0.142E-05	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	55NULL	31	0	0	0	0	00.000581	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	54NULL	31	0	0	0	0	04.15E-05	1	ONULL	g	mi	
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2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	36NULL	31	0	0	0	0	00.000856	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	35NULL	31	0	0	0	0	00.000202	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	31NULL	31	0	0	0	0	00.095086	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	5NULL	31	0	0	0	0	00.030279	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	3NULL	31	0	0	0	0	02.334285	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	2NULL	31	0	0	0	0	06.922605	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	2	1NULL	31	0	0	0	0	01.048159	1	ONULL	g	mi	
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2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	121NULL	21	0	0	0	0	00.001861	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	119NULL	21	0	0	0	0	0	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	118NULL	21	0	0	0	0	00.033339	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	117NULL	21	0	0	0	0	0	1	ONULL	g	mi	
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2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	115NULL	21	0	0	0	0	00.001289	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	112NULL	21	0	0	0	0	00.005685	1	ONULL	g	mi	
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2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	110NULL	21	0	0	0	0	00.039023	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	107NULL	21	0	0	0	0	0	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	106NULL	21	0	0	0	0	0	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	100NULL	21	0	0	0	0	00.044102	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	91NULL	21	0	0	0	0	00.048683	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	90NULL	21	0	0	0	0	0.3691.92	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	87NULL	21	0	0	0	0	01.191109	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	79NULL	21	0	0	0	0	01.122355	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	66NULL	21	0	0	0	0	00.000805	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	59NULL	21	0	0	0	0	00.000742	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	58NULL	21	0	0	0	0	00.000132	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	57NULL	21	0	0	0	0	00.000132	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	56NULL	21	0	0	0	0	01.39E-05	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	55NULL	21	0	0	0	0	00.000587	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	54NULL	21	0	0	0	0	05.88E-05	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	53NULL	21	0	0	0	0	03.46E-05	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	52NULL	21	0	0	0	0	0.17E-05	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	51NULL	21	0	0	0	0	04.29E-05	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	36NULL	21	0	0	0	0	00.001128	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	35NULL	21	0	0	0	0	00.000118	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	31NULL	21	0	0	0	0	00.073296	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	5NULL	21	0	0	0	0	00.023221	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	3NULL	21	0	0	0	0	01.471557	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	2NULL	21	0	0	0	0	0.7.145	1	ONULL	g	mi	
2,1,2015	2	1	2015	7	5	16	25	25025	250250	1	1NULL	21	0	0	0	0	01.145577	1	ONULL	g	mi	

Source: KBE and Massport.

**Table F-6 AEDT 2b Input File**

Study Input Report	
-----	
Study Information	
-----	
Report Date:	2/26/2016 2:11:52 PM
Study Name:	BOS_TermE_Existing2015_CMS_022516
Description:	BOS_TermE_Existing2015_CMS_022516
Study Type:	NoiseAndEmissions
Mass Units:	Kilograms
Use Metric Units:	No
-----	
Study Database Information	
-----	
Study Database Version: 1.43.2	
-----	
Airport Layouts	
-----	
Layout Name:	GENERAL EDWARD LAWRENCE LOGAN INTL Default Layout
Airport Name:	GENERAL EDWARD LAWRENCE LOGAN INTL
Airport Codes:	BOS, BOS, KBOS
Airport Description:	
Country:	US
State:	MASSACHUSETTS
City:	BOSTON
Latitude:	42.362972 degrees
Longitude:	-71.006417 degrees
Elevation:	20 feet
Runway:	04L/22R
Length:	7860 feet
Width:	150 feet
Runway End:	04L
Latitude:	42.357988 degrees
Longitude:	-71.014339 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%
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

**LOGAN  
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Terminal E  
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Expiration Date:	6/6/2079
Percent Wind:	0%
Runway:	04R/22L
Length:	10005 feet
Width:	150 feet
Runway End:	04R
Latitude:	42.351059 degrees
Longitude:	-71.011795 degrees
Threshold Elevation:	17.6 feet
Approach Displaced Threshold:	0 feet
Departure Displaced Threshold:	1154 feet
Crossing Height:	50 feet
Glide Slope:	3 deg
Effective Date:	1/1/1900
Expiration Date:	6/6/2079
Percent Wind:	0%
Runway End:	22L
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
Effective Date:	1/1/1900
Expiration Date:	6/6/2079
Percent Wind:	0%
Runway:	09/27
Length:	7000 feet
Width:	150 feet
Runway End:	09
Latitude:	42.355754 degrees
Longitude:	-71.012894 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%
Runway End:	27
Latitude:	42.360217 degrees
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
Expiration Date:	6/6/2079
Percent Wind:	0%

**LOGAN  
AIRPORT**  
Terminal E  
Modernization  
Project

Runway: 14/32  
 Length: 5000 feet  
 Width: 150 feet  
 Runway End: 14  
 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  
 Effective Date: 1/1/1900  
 Expiration Date: 6/6/2079  
 Percent Wind: 0%

Runway End: 32  
 Latitude: 42.348600 degrees  
 Longitude: -71.008246 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%

Runway: 15L/33R  
 Length: 2557 feet  
 Width: 150 feet  
 Runway End: 15L  
 Latitude: 42.373579 degrees  
 Longitude: -71.009127 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%

Runway End: 33R  
 Latitude: 42.368602 degrees  
 Longitude: -71.002457 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%

Runway: 15R/33L  
 Length: 10082 feet

**LOGAN  
AIRPORT**  
Terminal E  
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Project

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\_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 Default Layout  
 Annualizations:



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 Default 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  
-----  
Annualization: Root1  
-----  
-----  
Op group GSE  
-----  
-----





Child Case: GSE

-----  
Description: GSE  
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

**LOGAN  
AIRPORT**  
Terminal E  
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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

**LOGAN**  
**AIRPORT**  
Terminal E  
Modernization  
Project

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

**LOGAN  
AIRPORT**  
Terminal E  
Modernization  
Project

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

**LOGAN  
AIRPORT**  
Terminal E  
Modernization  
Project

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

**LOGAN  
AIRPORT**  
Terminal E  
Modernization  
Project

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

**LOGAN  
AIRPORT**  
Terminal E  
Modernization  
Project

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: ApplyLateralAttenuationToPropsAndHelos  
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

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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: ApplyLateralAttenuationToPropsAndHelos  
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.

**Table F-7 AEDT 2b Output File**

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	00:00.0	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	ClimbGround	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	ClimbBelow1000	0.84656	0.17435	27211.29138	10668.89618	11.14326	1.21491	1.21491					
Aircraft	ClimbBelowMixingHeight	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	ClimbBelow10000	2.48217	10.02952	89838.21143	35223.41285	36.78953	15.35934	15.35934					
Aircraft	Above10000	0	0	00:00.0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0								
Aircraft	DescendBelow10000	0.54087	1.16703	26747.11658	10486.90434	10.95318	2.11751	2.11751					
Aircraft	DescendBelowMixingHeight	0.13457	0.44461	0.06685	22408.29711	8785.75706	9.17639	0.64603	0.64603				
Aircraft	DescendBelow1000	0.14237	0.02318	6113.89399	2397.11153	2.50369	0.21176	0.21176					
Aircraft	DescendGround	0.04395	0.00582	2113.50257	828.65378	0.8655	0.06174	0.06174					
Aircraft	DescendTaxi	0	0	00:00.0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0								
Aircraft	FullFlight	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	0
	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 Population	0	0	00:00.0	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**)<sup>1</sup>, in addition to applicable emission factors (**Figures F-2 and F-3**). The CO<sub>2</sub> emission factors for electricity usage, expressed as pounds of CO<sub>2</sub> per megawatt hour, was obtained from the most recent ISO New England’s annual assessment of air emissions from regional electric generators.<sup>2</sup> The CO<sub>2</sub> emission factors for natural gas usage, in terms of kilograms of CO<sub>2</sub> per therm, was obtained from the U.S. Energy Information Administration.<sup>3</sup>

**Figure F-1: Total Building Energy Usage of Electricity and Fuel for Baseline and Preferred Cases**

Boston Logan Terminal-E Modernization Forecast Energy Use Estimation							4.15.2016	
<i>Assumptions:</i>								
Boiler Plant Average Efficiency: 70%			Chiller Plant Coefficient of Performance: 4.4					
Steam Closed Loop Distribution Losses: 15%			Chilled Water Thermal Distribution Losses: 5%					
Scope	On-Site Energy			Central Plant Energy		Total Energy Consumption		
	Electric	Steam/ Hot Water	Chilled Water	Boiler Natural Gas	Chiller Electricity	Electric	Natural Gas	
	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 plant efficiencies and distribution thermal losses.
- 5 plant efficiencies and distribution thermal losses.
- 6 For the purpose of this exercise, the Central Plant energy performance has been assumed to meet LEED requirements when the actual 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](http://www.iso-ne.com/static-assets/documents/2016/01/2014_emissions_report.pdf).

3 U.S. Energy Information Administration, Emission Factors and Global Warming Potentials, [http://www.eia.gov/oiaf/1605/emission\\_factors.html](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
<b>NO<sub>x</sub></b>	20.32	20.49	0.8	0.36	0.38	5.6
<b>SO<sub>2</sub></b>	18.04	11.68	-35.3	0.32	0.22	-31.3
<b>CO<sub>2</sub></b>	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 Combustion<sup>1</sup>

Fuel	Emission Factor	Units
<b>Natural Gas<sup>2</sup></b>		
<i>Pipeline Natural Gas</i>		
HHV of 975 - 1000 Btu/scf	54.01	kg CO <sub>2</sub> / MMBtu
	5.401	kg CO <sub>2</sub> / therm
HHV of 1000 - 1025 Btu/scf	52.91	kg CO <sub>2</sub> / MMBtu
	5.291	kg CO <sub>2</sub> / therm
HHV of 1025 - 1050 Btu/scf	53.06	kg CO <sub>2</sub> / MMBtu
	5.306	kg CO <sub>2</sub> / therm
HHV of 1050 - 1075 Btu/scf	53.46	kg CO <sub>2</sub> / MMBtu
	5.346	kg CO <sub>2</sub> / therm
HHV of 1075 - 1100 Btu/scf	53.72	kg CO <sub>2</sub> / MMBtu
	5.372	kg CO <sub>2</sub> / therm
Weighted National Average (1029 Btu/scf)	53.06	kg CO <sub>2</sub> / MMBtu
	5.306	kg CO <sub>2</sub> / therm
<i>Flared Natural Gas</i>		
	54.71	kg CO <sub>2</sub> / MMBtu
	5.471	kg CO <sub>2</sub> / therm

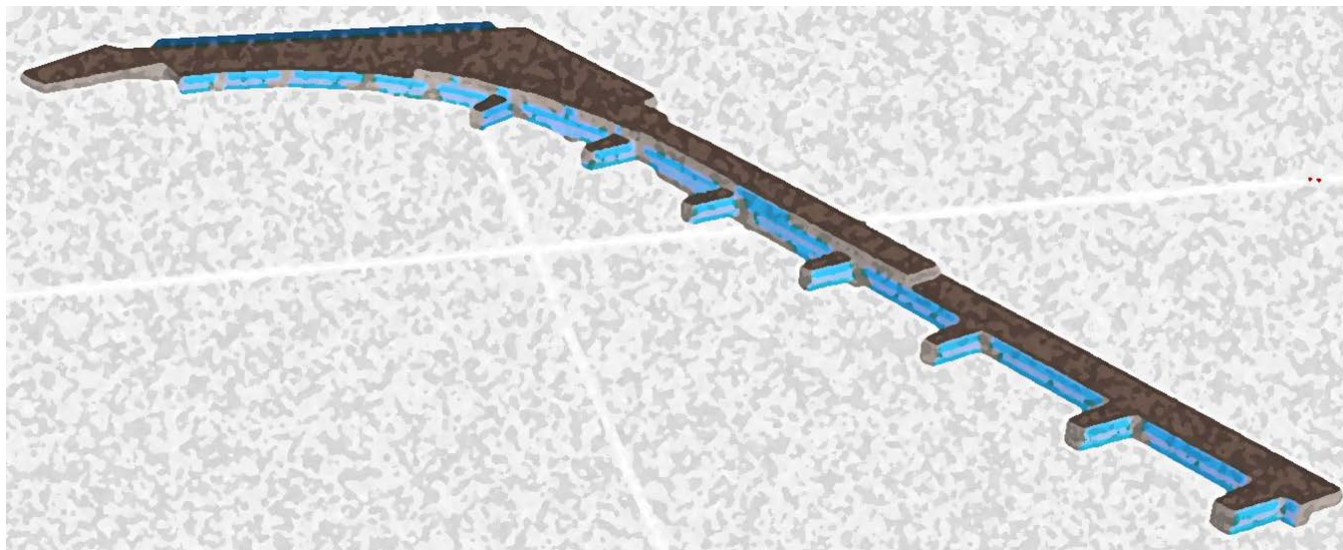
<sup>1</sup> All factors assume 100 percent combustion except those for MSW, which assume 98% combustion.

<sup>2</sup> 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**

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**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
<i>Energy Modeling Software</i>	eQuest 3.64, build 7130
<i>Weather File</i>	TMY3, MA_Boston_Logan_Intl_Arp
<i>Heating Design Day</i>	8.1°F
<i>Cooling Design Day</i>	87.6°F DB 71.9°F CWB 14.9 Drybulb Range

### Architectural

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Building Area (ft<sup>2</sup>)</i>	640,000	640,000
<i>Occupancy, building average (area/ person)</i>	50	50
<i>Space Set-point Cooling (F)</i>	75°F	75°F
<i>Space Set-point Heating (F)</i>	70°F	70°F
<i>Roof Assembly</i>	U-0.048	Membrane roofing system with 4 in. polyiso insulation minimum, 8 in maximum at R-6.0 per inch; U-0.037
<i>Wall Assembly - Above Grade</i>	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
<i>Floor Assembly</i>	U-0.038	Exposed deck sprayed with 4 in. of urethane closed cell insulation U-0.038
<i>Vertical fenestration Area (% of wall)</i>	Max Allowable 40%	25%
<i>Vertical Glazing U-factor</i>	Curtainwall Assembly U-factor: 0.45	Curtainwall: Double-glazed argon-filled 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)
<i>Vertical Glazing SHGC</i>	0.40	0.19
<i>Vertical Glazing Tvis</i>	n/a	0.36
<i>Shading Devices</i>	None	Exterior fixed shades with exposed glazing on the curb and south side of terminal.
<i>Building Self-Shading Description</i>	None	Building is self-shaded by its own exterior surfaces.

## Electrical / Lighting

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Automatic Lighting Shutoff Method</i>	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.
<i>Interior Lighting Power Calc Method</i>	Building Area Method	Building Area Method
<i>Average Interior Lighting Power Density (W/SF)</i>	0.77	0.62
<i>Automatic Interior Space Shutoff Control in Required Spaces</i>	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
<i>Daylight Dimming Controls</i>	In all perimeter areas with exposure to natural daylight.	In all perimeter areas with exposure to natural daylight.
<i>Exterior Lighting Power (kW)</i>	16.0	9.3
<i>Equipment, building average (w/ft2)</i>	2.0	2.0
<i>Elevator Total Power (kW)</i>	147	147
<i>Escalator Total Power (kW)</i>	155	155
<i>Baggage Handling Equipment (kW)</i>	960	960

### Mechanical (Air-side)

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Primary HVAC Type</i>	System 7: VAV with reheat	VAV units with reheat serving the building by space type. Separate units serving holding level and club level.
<i>Cooling</i>	Chilled water (campus plant)	Chilled water (campus plant)
<i>Heating</i>	Steam (campus plant)	Steam (campus plant)
<i>Fan System Operation</i>	Fans are operated continuously	Fans are operated continuously
<i>VAV Terminal Box Minimum Flow</i>	30%	50% <b>ECM – Dual Box, 30% for cooling, 50% for heating</b>
<i>Outdoor Air Design Min Ventilation</i>	Based on 62.1-2007 minimum.	Based on 62.1-2007 minimum, approximately 23% outdoor air.

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>HVAC Air-side Economizer Cycle</i>	Based on drybulb	Based on dual enthalpy
<i>Economizer High-Limit Shutoff</i>	70°F DB	N/A
<i>Design Airflow Rates (Conditioned)</i>	358,000 CFM	474,000 CFM
<i>Total System Fan Power (Conditioned)</i>	650 kW	570 kW
<i>Air Filtration</i>	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 <b>ECM – Dynamic V8 Filter (eliminates Merv 13 and carbon)</b>
<i>Pressure Drop Adjustments</i>	MERV 13 for filters, carbon filters, sound attenuators	N/A
<i>Exhaust Air Energy Recovery</i>	None (not required)	<b>ECM – Enthalpy Heat Wheel</b>
<i>Demand Control Ventilation</i>	Spaces greater than 40 people / 1000 sq ft. and >500sf	Spaces greater than 40 people / 1000 sq ft. and >500sf
<i>Supply Air Temperature Reset Parameters</i>	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
<i>Primary Cooling Source</i>	Chilled water from campus central plant	Chilled water from campus central plant
<i>Chilled Water Loop Supply Temp</i>	44°F	42°F

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Chilled Water (CHW) Loop Delta-T</i>	12°F	16°F
<i>CHW Loop Temp Reset Parameters</i>	Load reset	Constant temperature
<i>CHW Loop Configuration</i>	Primary, variable secondary	Variable Primary
<i>Number of Chilled Water Pumps</i>	1 – primary 1 – secondary	1 - primary
<i>Chilled Water Pump Flow Rate</i>	4,000 GPM 4,000 GPM	2,200 GPM
<i>Chilled Water Pump Power</i>	32 kW 32 kW	72 kW

### Mechanical (Waterside – Heating)

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Primary Heating Source</i>	Steam from campus central plant	Steam from campus central plant
<i>Hot Water Loop Supply Temperature</i>	180°F	200°F – preheat loop 180°F – reheat loop
<i>Hot Water Loop Delta-T</i>	50°F	20°F
<i>Hot Water Loop Temp Reset Parameters</i>	Load reset	Constant temperature
<i>Hot Water Loop Configuration</i>	Variable flow with variable speed pump	Variable flow with variable speed pump
<i>Number of Hot Water Pumps</i>	1	1

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Chilled Water Pump Flow Rate</i>	710	625 GPM
<i>Hot Water Pump Power</i>	10 kW	21 kW
<i>Fin Tube Radiation</i>	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
<i>Service Hot Water Type</i>	Same as Proposed Case	Electric instantaneous hot water heaters
<i>Temperature</i>	140°F	140°F
<i>Flowrate (GPM)</i>	52	32

### Renewable Energy

MODEL INPUT PARAMETER	BASELINE CASE	PROPOSED CASE
<i>Photo Voltaic Array</i>	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.	<b>Adopted</b>
ROOF R	Roof R-value to <i>meet</i> prescriptive code minimum.	<b>Adopted</b>
FLOOR R	Exposed floor assembly R-value to meet prescriptive code minimum, including thermal bridges.	<b>Adopted</b>
SLAB R	Slab insulation to meet prescriptive code minimum.	<b>Adopted</b>
MASS	Maximize thermal mass for thermal damping.	<b>Adopted</b>
SPANDREL	Fully insulated Spandrel.	<b>Adopted</b>
AIRTIGHT	Comprehensive air sealing. Consider blower door test, typical window tests and door tests. Refer to AAMA 101 testing procedures.	<b>Adopted</b>
LIGHT-ROOF	High-albedo roofing material.	<b>Adopted</b>
WWR ≤ 40%	Limit overall building window-to-wall ratio for vision glass to 40% or less to limit solar gains and heat loss.	<b>Adopted</b>
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.	<b>Adopted</b>
GLASS SHGC +	Optimized glass SHGC based on space conditions and direction. SHGC at 0.35 or less is highly recommended.	<b>Adopted</b>
FIXED SHADE	Fixed exterior shading devices to limit solar gains (low cost, horizontal facing south are optimal).	<b>Adopted</b>
INT BLINDS	Automated reflective interior blinds to reduce solar heat gain coefficient	<b>Rejected</b>

ELECTRICAL		
ECM	Details	Categorization
LPD -20%	Interior lighting power density reduction through LED lighting, reducing fixture count, and limiting lighting levels to code minimum.	<b>Adopted</b>
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.	<b>Adopted</b>
LIGHT-OCC	Occupancy / vacancy sensor control exceeding code.	<b>Adopted</b>
LIGHT-MULTI	Multi-scene / multi-level / bi-level to allow lighting to be reduced.	<b>Adopted</b>
EXT LPD REDUC	Exterior lighting power density reduction.	<b>Adopted</b>
ELEVATOR	High efficiency elevator and escalator.	<b>Adopted</b>
MECHANICAL		
ECM	Details	Categorization
HVAC ZONING	Separate systems for areas with differing usage, outdoor air requirements, space setpoints, etc.	<b>Adopted</b>
SEAL DUCTS	Seal and leak check all supply air ductwork.	<b>Adopted</b>
EC MOTORS	Electrically commutated motors for fan coil units, pumps, fans, where equipment is available. Can be more efficient than fan with VFD.	<b>Adopted</b>
↓AHU SP	Low static pressure, low velocity across coils and filters in AHU.	<b>Adopted</b>
↓DUCT SP	Low static pressure, low velocity in ducts.	<b>Adopted</b>
PERIMETER	Hydronic heating at the perimeter	<b>Under further consideration</b>
HW LOOPS	Separate hot water loops for reheat, preheat and perimeter heating for increased controllability.	<b>Adopted</b>
MOTOR EF	Premium-efficiency pumps and fan motors.	<b>Adopted</b>
FAN ARRAY	Mutli-fan arrays for AHUs for increased controllability.	<b>Adopted</b>
DYNAMIC V8	MERV 15 advanced low-pressure drop air filtering.	<b>Under further consideration</b>
HEAT RECOV	Heat wheel energy recovery.	<b>Under further consideration</b>
GROUND	Ground source heat pumps	<b>Rejected</b>



CONTROLS		
ECM	Details	Categorization
MIN VENT	Provide only minimum ventilation as required by code.	<b>Adopted</b>
SAT RESET	10°F supply air temperature reset.	<b>Adopted</b>
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.	<b>Adopted</b>
+DCV	Demand controlled ventilation beyond code. Control to increase and decrease airflow based on ventilation and load.	<b>Adopted</b>
SETBACK T	Unoccupied temperature setbacks based on occupancy sensor or time of day.	<b>Adopted</b>
DUAL MAX	Dual-maximum VAV-box control which allows the minimum to be reduced below the heating airflow.	<b>Under further consideration</b>
HVAC-OCC	Occ-sensor-based temp and airflow setbacks in applicable spaces (office, conf, etc).	<b>Adopted</b>
FAN CYCLING	Turn fans (supply, return, general exhaust) off when building is not occupied. Allow to cycle on to meet load, if necessary.	<b>Rejected</b>
PLUMBING		
ECM	Details	Categorization
DHW -30%	Reduce domestic hot water usage by using low flow fixtures.	<b>Adopted</b>
DISTRIBUTED GENERATION (ON-SITE)		
ECM	Details	Categorization
SOLAR	Photovoltaic array or solar hot water panels on roof.	<b>Under further consideration</b>
COGEN	Combined heat and power	<b>Rejected</b>

## 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.

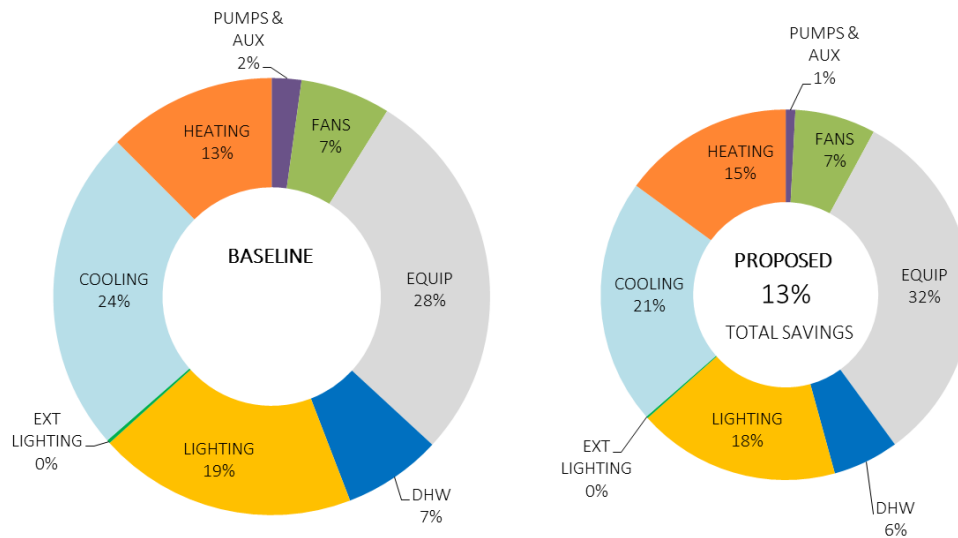
**Results** The following table shows the current standing of the proposed design in % energy savings versus ASHRAE 90.1-2010 Appendix G baseline case. By adding the ECMs which are ‘Under Further Consideration’ the savings impact can be noted. The current design results in a savings of 13.8%. Cumulatively the additional ECMs would result in a total savings of up to 23.7%.

Current Design	Add: Dual Box Minimum	Add: Fin Tube Radiation	Add: Energy Recovery Wheel	Add: Dynamic V8 Filtration	Add: Photo 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

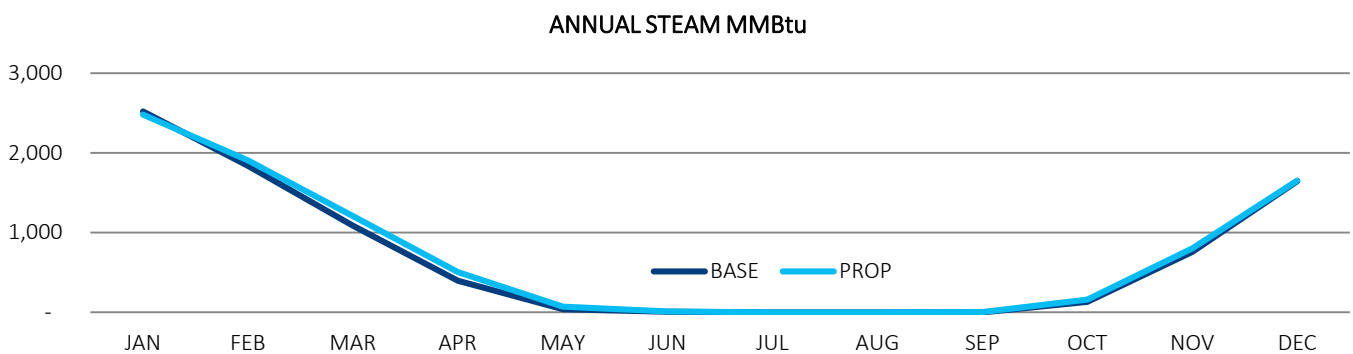
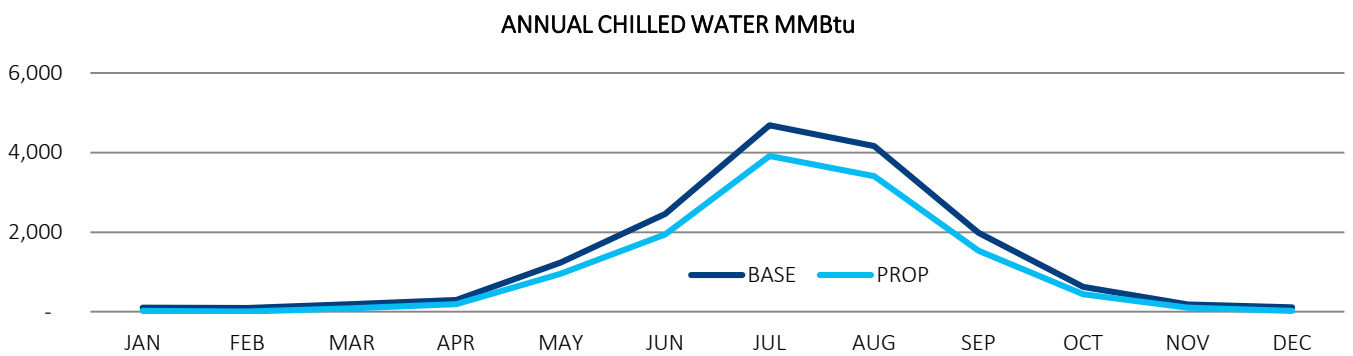
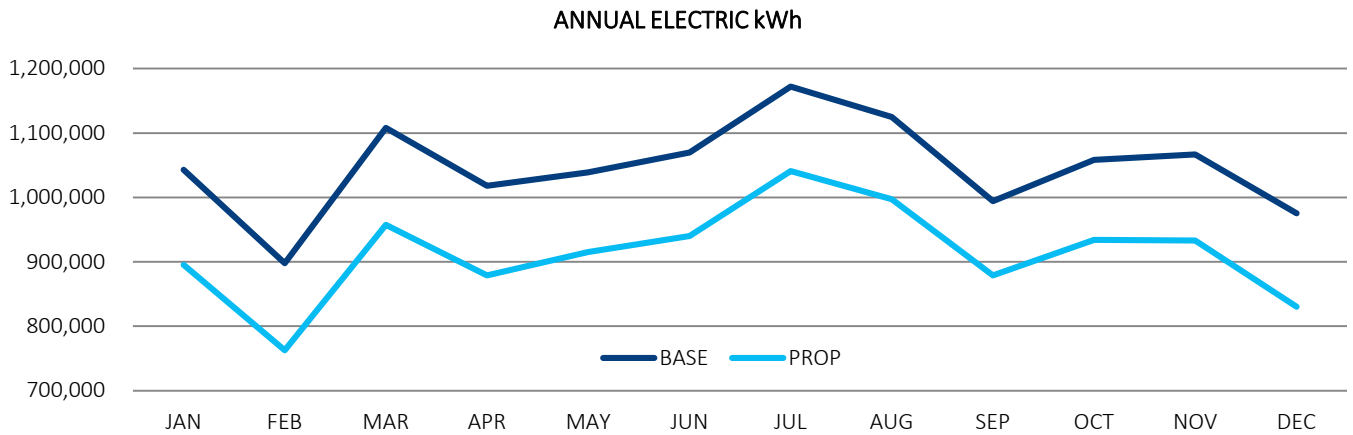


ENERGY CONSUMPTION	SOURCE	BASELINE			PROPOSED		PERCENT SAVINGS
		ENERGY (MMBTU/YR)	PERCENT OF TOTAL		ENERGY (MMBTU/YR)	PERCENT OF TOTAL	
Space Cooling	Chilled Water	16,490	24%	Chilled Water	12,620	21%	22%
Space Heating	Steam/Hot Water	8,790	13%	Steam/Hot Water	8,810	15%	-5%
Pumps	Electricity	1,520	2%	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%
<b>Total Building Energy Consumption</b>		<b>68,200</b>			<b>58,800</b>		<b>14%</b>

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.*

MONTH	ELECTRIC kWh		CHILLED WATER MMBtu		STEAM MMBtu	
	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



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# Appendix H

## Agency Correspondence

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# MBTA Meeting Minutes



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**AECOM**  
66 Long Wharf, 2<sup>nd</sup> Floor, Boston, MA 02110  
T 617.723.1700 F 617.749.0947 www.aecom.com

## Memorandum

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Date: May 19 2016  
To: File  
From: Ross Edwards  
Subject: MBTA Meeting of 10NOV2016

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Distribution: S. Sleiman, F. Leo; R. McNulty; S. Dalzell M. Avery; C. Lurie

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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

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# CZM Meeting Minutes

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Place: CZM, Causeway Street, Boston

## Meeting Notes

Date: April 14, 2016

Notes Taken by: Meredith Avery

Project #: Terminal E Modernization

Re: Briefing on Terminal E Modernization and Coastal Resiliency Measures

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**ATTENDEES** Bradford Washburn (CZM), Lisa Berry Engler (CZM), Stewart Dalzell (Massport), Robbin Peach (Massport), Ross Edwards (AECOM), Meredith Avery (VHB)

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- 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.

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# DOER Meeting Minutes



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**AECOM**  
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## Memorandum

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Date: May 03 2016  
To: File  
From: Ross Edwards  
Subject: MEPA DOER Meeting of 30MAR2016

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Distribution: S. Dalzell; F. Leo; R. McNulty; M. Avery; C. Lurie

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Location:  
MEPA Office  
100 Cambridge St.  
2:30 – 3:30  
30MAR2016

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](mailto:SDalzell@massport.com)  
Avery, Meredith [MAvery@VHB.com](mailto:MAvery@VHB.com)  
Edwards, Ross [Ross.Edwards@aecom.com](mailto:Ross.Edwards@aecom.com)

1. 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.

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