Summary of Key Findings

Visitors

4.02 million visitors (person trips to the area)

- Split roughly 50:50 between day and overnight trips

7.1 million visitor days/nights

- 2.0 million day trips and 5.1 million person nights on overnight trips

2.9 million travel party days/nights (average party size 2.5)

- 40% overnight stays with friends and relatives (VFR), 28% day trips, 28% hotel, 2% campground, 2% seasonal homes
- 813,000 room nights in hotels

The Spending

$431 million total visitor spending in Washtenaw County excluding airfares

- $109 per travel party per day for day visitors and visitors staying with friends or relatives, $255 per party per night for visitors in hotels or B&B's.
- Spending by category: restaurants (23%), lodging (18%), gas and local transportation (22%), groceries (9%), recreation/entertainment (7%), shopping/other retail (21%).
- Tourist spending accounts for 95% of all hotel sales in the area, 17% of restaurant sales, 24% of amusements, and 5% of retail trade (2006 estimates)

Overnight visitors staying in hotels account for 48% of visitor spending

The Economic Impacts

Direct Effects in tourism-related businesses

- 5,900 jobs
- $133 million for wages, salaries and payroll benefits
- $1.4 million in local room tax, $29 million in state sales taxes
- Tourism jobs by primary tourism sectors (rounded to nearest 10 jobs)

Restaurants – 2,270	Lodging – 1,430
Amusements – 830	Retail trade – 1,150

Total impacts including secondary effects

- 7,400 jobs
- $189 million wages and salaries
- Tourism accounts for about 1.9% of all income in the county and about 3% of all jobs (2006 estimates)

Tourism Activity and Spending, 2002-2006

Table 1. Tourism Activity and Spending, Washtenaw County, 2002-2006

Total tourist spending in Washtenaw County increased from $351 million in 2002 to $431 million in 2006. Tax collections and room revenues increased by 11% over this four-year period (Table 1). The number of room nights and overall number of visitors have been relatively stable since 2002. Spending increases have been driven largely by price increases.

Measure	2002	2003	2004	2005	2006
Room tax collections (in $ millions)	$1.20	$1.21	$1.28	$1.33	$1.4
Room revenue (in $ millions)	$59.88	$60.27	$63.90	$66.75	$70.27
Party days/nights (in 000's)	2,810	2,814	2,848	2,842	2,854
Spending per party per day	$125	$129	$136	$144	$151
Total spending (in $ millions)	$351	$363	$387	$409	$431

Spending and Visits by Lodging Segment, 2006

Table 2. Breakdown of Visitors by Segment , Washtenaw County, 2006

Tourists are divided into five segments based on the type of lodging used (Table 2). Principal visitor segments for Washtenaw County are visitors on day trips (28% of party days), overnight stays in hotels (28%) and stays with friends and relatives (40%). Number of visitors and room nights in hotels are based on 2006 room tax data and occupancy reports for 16 of 52 properties. Numbers of visitors in the other segments were taken from the 2002 report and assumed to be constant based on little change in hotel room nights.

	Day trip	Hotel or motel	Camp	Seasonal home	Stay with friends or relatives	Total
Party days/nights (000's)	790	813	47	67	1,137	2,854
Party size	2.5	2.5	2.5	2.5	2.5	2.5
Length of stay in days	1	2	2	4	3	
Party trips (000's)	790	407	24	17	379	1,617
Person trips (000's)	1,975	1,018	60	43	948	4,044
Person days/nights (000's)	1,975	2,036	120	172	2,844	7,147
Party nights	28%	28%	2%	2%	40%	100%

Table 3. Visitor Spending by Lodging Segment, Washtenaw County, 2006

The five visitor segments help to explain variations in spending by different types of visitors. Table 3 provides a detailed analysis of spending for various goods and services by lodging type. Spending averages are reported on a party day basis for day trips and party night basis for overnight visitors. Spending averages from 2002 were price adjusted to 2006. The room rate of $90 per night includes a 6% state tax and 2% county room tax.

Total visitor spending in Washtenaw County in 2006 was $431 million. Visitors staying in hotels accounted for about half of this spending. A typical travel party spends $109 per day on day trips or staying with friends or relatives and $255 per night if staying in a hotel or B&B. The largest spending categories are restaurants and bars (23%), shopping (21%), transportation (22%), and lodging (18%).

	Visitor Segment					Total Spending	
Spending category	Day trip	Hotel	Camp	Seasonal home	Stay with friends or relatives	$ Millions	Pct
	Spending per party per day/night						
Hotel or B&B	-	93.69	-	-	-	76.17	18%
Camping fees	-	-	22.19	-	-	1.00	0%
Restaurants & bars	25.97	56.21	19.23	24.43	27.89	100.46	23%
Groceries, take-out food/drinks	7.19	14.50	14.50	18.11	17.50	39.27	9%
Transportation	29.66	44.41	38.27	36.28	27.14	94.61	22%
Admissions & fees	14.30	14.79	7.64	5.47	5.73	30.56	7%
Shopping	32.33	31.76	19.10	21.67	31.31	89.31	21%
Total ($ per party per day)	**109**	**255**	**121**	**106**	**110**		**100%**
Party days/nights (000's)	790	813	47	67	1,137	2,854	
Total spending (in $ millions)	$ 86	$ 208	$ 6	$ 7	$ 125	$ 431	
Percent of total	20%	48%	1%	2%	29%	100%	

Direct Economic Impacts of Visitor Spending

Table 4. Economic Impacts of Visitor Spending, Washtenaw County, 2006

Direct economic effects are the changes in economic activity within those economic sectors selling directly to tourists (e.g., hotels, restaurants, retail stores). Sales, jobs, wages and salaries, and value added are four measures of economic impact (Table 4). Wages and salaries include all payments to workers including contributions to retirement and health care programs. Jobs are not full time equivalents, but count part time and full time jobs the same. Value added is a commonly used measure of the contribution of an activity or sector to the region's economy. Value added includes wages and salaries paid to workers, profits and rents of firms, and sales and other indirect business taxes attributable to visitor spending.

Total direct sales are presented in Table 4 by spending category. Direct sales are less than visitor spending, as only the retail and a part of wholesale margins on goods bought by visitors is captured by the local economy.

The $431 million spent by visitors in Washtenaw County in 2006 resulted in $133 million in direct personal income (wages and salaries) in tourism-related sectors and a total direct value added to the region's economy of $181 million. Tourism supported over 5,900 jobs in tourism-related sectors.

Sector/Spending category	Total sales ($000's)	Jobs	Wages and salaries ($ 000's)	Value added[a] ($000's)
Direct effects				
Hotel or B&B	76,170	1,426	33,326	53,943
Camping fees	1,043	8	111	262
Restaurants & bars	100,464	2,267	43,695	49,254
Admissions & fees	30,562	828	10,284	17,205
Other vehicle expenses	2,974	15	680	1,553
Local transportation	9,954	196	5,578	6,297
Retail trade	70,808	1,151	34,674	45,390
Wholesale trade	10,719	55	4,144	7,244
Local production of goods	698	2	96	146
Total direct effects	303,392	5,948	132,589	181,294
Secondary effects	157,043	1,474	56,375	96,934
Total effects	$ 460,435	7,422	$ 188,964	$ 278,228

[a] Value added includes wages and salaries, profits and rents, and sales tax

Secondary and Total Economic Impacts of Visitor Spending

Multipliers capture the magnitude of the secondary effects as visitor spending circulates through the local economy. The two types of secondary impacts are indirect and induced effects. Indirect effects are the changes in sales, income or employment within the region in backward-linked industries supplying goods and services to tourism businesses. For example, the increased sales in linen supply firms as a result of motel hotel sales is an indirect effect of visitor spending. Induced effects are the increased sales within the region that result from the spending of the income earned in tourism and supporting industries. Employees in tourism and supporting industries spend their income on housing, utilities, groceries and other goods and services thereby generating sales, income and employment throughout the region.

The size of a multiplier depends largely on a region's geographic size and overall economic diversity. Regions with extensive economic development will have larger tourism multipliers than regions with limited economic development. The overall tourism sales multiplier for Washtenaw County in 2001 was 1.50, which means that an additional $ .50 in secondary sales is generated for every $1.00 of direct tourism sales.

While the direct effects can be traced to individual tourism sectors, secondary effects generally accrue to a variety of firms within the county that benefit either by selling goods and services to tourism firms or to their employees.

Secondary effects of tourist spending generate an additional 1,474 jobs and $56 million in wages and salaries in Washtenaw County, bringing the total impact to 7,422 jobs, $189 million in wages and salaries and over $278 million in value added.

Based on Bureau of Labor Statistics (BLS, 2006) estimates of covered jobs and income in 2006 for Washtenaw County, tourism represents 1.9% of income and 3.5% of all jobs in the county in 2006.

Methods

Tourism impacts for Washtenaw County are estimated using the Michigan Tourism Spending and Economic Impact Model (MITEIM) model (Stynes, 2000). The model computes total tourist spending in the county by multiplying visits in party nights times an average spending per party night. Distinct spending profiles are used for five travel market segments: (1) day trips of 50 miles or more, and overnight trips involving stays in (2) motels, or B&B's (3) campgrounds, (4) seasonal homes, or (5) with friends or relatives. Spending profiles for these segments were adapted from the MITEIM "high" spending profiles in 2002 and have been price adjusted to 2006 using Bureau of Labor Statistics price indices for each spending category. Hotel room rates are set based on reported monthly rates from 16 Washtenaw County hotels and are balanced for consistency with total room tax collections.

Visits for the hotel segment were estimated based on estimates of room nights and room taxes. Based upon little change in hotel room nights between 2002 and 2006 and lacking other more recent data covering day trips or stays with friends and relatives, the number of visits for the other four segments were assumed to be unchanged since 2002 (Stynes 2003).

Direct and secondary economic impacts are estimated by applying total visitor spending to an input-output model of the Washtenaw County economy. The model converts spending to the associated income and jobs and estimates multiplier effects.

The model was estimated using year 2001 data and the IMPLAN system (MIG, Inc. 1999). IMPLAN and MITEIM estimates of employment, sales and income for key tourism sectors in Washtenaw county are also checked for consistency with more recent data from the 2002 Economic Census, Bureau of Labor Statistics (BLS) and Bureau of Economic Analysis (BEA) REIS data.

References

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MIG., Inc. 1999. IMPLAN Pro, 2.0. User's Guide, Analysis Guide, Data Guide. Stillwater, MN: Minnesota IMPLAN Group Inc.

Stynes, D.J. 2000. Michigan tourism spending and economic impact model (MITEIM). East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University.

Stynes, D.J. 2003. Washtenaw County: Summary of Tourism Impacts 2002. East Lansing, MI: Department of Park, Recreation and Tourism Resources, Michigan State University.

Glossary of Economic Impact Terms

Impact analysis estimates the impact of dollars from outside the region ("new dollars") on the region's economy. Impact analysis typically includes only the spending of visitors from outside the region.

IMPLAN is a micro-computer-based input output modeling system. With IMPLAN, one can estimate Input-Output models of up to 528 sectors for any region consisting of one or more counties.

Multipliers capture the size of the secondary effects in a given region, generally as a ratio of the total change in economic activity in the region relative to the direct change. Multipliers express the degree of interdependency between sectors in a region's economy and therefore vary across regions and sectors.

Region - defines the geographic area for which impacts are estimated. Impact regions are generally an aggregation of one or more counties.

Sector - a grouping of industries that produce similar products or services. Tourism is more an activity or type of customer than an industrial sector. While hotels are a relatively pure tourism sector, restaurants, retail establishments and amusements sell to both tourists and local customers. Tourist spending surveys are useful in determining visitor spending in various sectors.

Economic Impact Effects

Direct effects are the changes in economic activity during the first round of spending. For tourism this involves the impacts on the tourism industries (businesses selling directly to tourists) themselves.

Secondary effects are the changes in economic activity from subsequent rounds of re-spending of tourism dollars. There are two types of secondary effects:

> **Indirect effects** are the changes in sales, income or employment within the region in backward-linked industries supplying goods and services to tourism businesses. For example, the increased sales in linen supply firms resulting from more motel sales are an indirect effect of visitor spending.
>
> **Induced effects** are the increased sales within the region from household spending of the income earned in tourism and supporting industries. Employees in tourism and supporting industries spend the income they earn from tourism on housing, utilities, groceries and other consumer goods and services. This generates sales, income, and employment throughout the region's economy.

Total effects are the sum of direct, indirect and induced effects.

Measures of Economic Activity

Sales - the dollar volume of a good or service produced or sold.

Income is the money earned within the region from production and sales. Total income includes wage and salary income and income of sole proprietor's.

Jobs or employment - a measure of the number of jobs required to produce a given volume of sales/production. Jobs are not expressed as full-time equivalents, but include part-time and seasonal positions. Seasonal jobs are adjusted to an annual basis, i.e. , four jobs for three months each equates to one job.

Value added is the sum of wages and salaries, payroll benefits, profits and rents, and sales and other indirect business taxes. Value added is the most commonly used measure of the contribution of a region or sector to the economy, as it avoids double counting of intermediate sales and captures only the "value added" by the region to final products.

Appendix

Table A1. Multipliers for Selected Tourism-Related Sectors , Washtenaw County

	Direct effects			Total effects multipliers				
Sector	Jobs/ $MM Sales	Income/ Sales	Value added/ Sales	Sales I	Sales II	Jobs II/ $MM Sales	Inc II/ Sales	VA II/ Sales
Hotels	19.37	0.44	0.71	1.22	1.47	23.88	0.61	1.01
Campgds and B&B's	7.62	0.11	0.25	1.55	1.70	13.69	0.35	0.68
Eating & drinking	23.36	0.43	0.49	1.25	1.51	28.20	0.61	0.80
Amusements/Recreation	28.04	0.34	0.56	1.31	1.54	33.49	0.53	0.89
Local transportation	20.41	0.56	0.63	1.23	1.57	26.14	0.78	0.97
Auto repair and service	5.20	0.23	0.52	1.38	1.56	9.89	0.43	0.83
Retail trade	16.82	0.49	0.64	1.27	1.56	22.45	0.70	0.99
Wholesale trade	5.36	0.39	0.68	1.22	1.46	9.99	0.56	0.96

SOURCE: Input-output model of Washtenaw County economy, estimated with the IMPLAN system using 2001 data. Job to sales ratios are adjusted to 2006 based on CPI. Other ratios and multipliers are assumed unchanged from 2001.

Brief Explanation of Table

Direct effects are economic ratios to convert sales in each sector to jobs, income and value added.

- Jobs/$MM sales is jobs per million dollars in sales
- Income/sales is the percentage of sales going to wages and salaries
- Value added/sales is the percentage of sales that is value added (Value added covers all income, rents and profits and indirect business taxes)

Total effects are multipliers that capture the total effect relative to direct sales

- Sales II is the usual Type II sales multiplier = (direct + indirect + induced sales)/ direct sales
- Sales I captures only direct and indirect sales
- Job II/ MM sales = total jobs (direct + indirect + induced) per $ million in direct sales
- Income II /Sales = total income (direct + indirect + induced) per $ of direct sales
- VA II/ Sales = total value added (direct + indirect + induced) per $ of direct sales

Using the Hotel Sector Row to Illustrate

Direct effects: Every million dollars in hotel sales creates 19 jobs in hotels. Forty-four percent of hotel sales goes to wages and salaries of hotel employees and 71% of hotel sales is value added. That means 29% of hotel sales goes to purchase inputs by hotels. The wage and salary income creates the induced effects and the 29% spent on purchases by the hotel starts the rounds of indirect effects.

Multiplier effects: There is an additional 22 cents of indirect sales in Washtenaw County for every dollar of direct hotel sales (type I sales multiplier = 1.22). Total secondary sales are equivalent to 47 cents per dollar of direct sales, which means 22 cents in indirect effects and 25 cents in induced effects. An additional 4.5 jobs are created from secondary effects of each million dollars in hotel sales (23.9 total jobs – 19.4 direct jobs per $million). These jobs are scattered across other sectors of the local economy. Similarly, secondary income is 17% of each dollar of hotel sales (61%-44%) and secondary value added is 30% (101%-71%). Including secondary effects, every million dollar of hotel sales in Washtenaw County yields $1.47 million in sales, $610,000 in income, and just over $1 million in value added.

TETRA TECH

August 23, 2007

Mr. Ira Ury
F.H.I. Inc.
9700 W. Higgins, Suite 810
Rosemont, IL 60018

Re: Proposed Metro 202 Hotel Development
Traffic Impact Assessment
City of Ann Arbor, Michigan
200-22548-07001R

Dear Mr. Ury:

Tetra Tech (Tt) has completed our traffic impact assessment for the proposed Metro 202 hotel development, as requested by Les Sipowski at the City of Ann Arbor. As we understand it, the proposed site plan will consist of a 120 room hotel. The hotel will not provide any banquet facilities and there will be limited food service available to guests of the hotel. The site is located on the southwest quadrant of the intersection of Washington Street and Division Street in the City of Ann Arbor, Michigan. The site as proposed would have a single access point to Division Street which will serve as a drop off location only. Customers would then be required to exit back onto Division Street to park in the nearby Liberty Square Parking Structure located on Washington Street, east of Division Street.

Division Street is a one-way northbound roadway under the jurisdiction of the City of Ann Arbor. Division Street consists of four lanes northbound and a 66 foot wide ROW. Washington Street is also under the jurisdiction of the City of Ann Arbor and has a three lane roadway cross section (66 foot wide ROW) that runs in the east and westbound directions. Washington Street provides on street parking on the north side of the roadway.

Existing Traffic Conditions

Tetra Tech obtained existing AM peak hour (7:00 AM to 9:00 AM) and PM peak hour (4:00 PM to 6:00 PM) traffic counts from Les Sipowski at the City of Ann Arbor for the intersections of Washington Street with Division Street and 5th Street.

Background Traffic Conditions

A background traffic scenario was developed to approximate traffic conditions of the adjacent roadway system prior to construction of the proposed development. Background traffic is generated from other developments in the area and normal yearly increases in traffic, which are unrelated to the development of this proposed project. The development is expected to reach full build out no later than the first quarter of 2009 or two years. A two percent annual growth rate was decided to be appropriate for use in forecasting the background traffic growth based on conversations with the City of Ann Arbor. This scenario approximates traffic conditions in

two years as if the development was not built. Analysis of the background traffic scenario provides a basis for evaluating future traffic impacts directly related to development of the project site.

Trip Generation Forecast

Using methodologies specified in the latest version of *Trip Generation (7th Edition)* published by the Institute of Transportation Engineers (ITE), Tt forecast the daily, AM peak hour and PM peak hour trips generated by the proposed hotel development. Below is a table summarizing hour findings.

Table 1
Trip Generation for Proposed Development

Land Use	Land Use Code	Size	AM Peak Hour			PM Peak Hour			Week Day
			In	Out	Total	In	Out	Total	
Hotel	310	120 Rooms	31	20	51	38	33	71	701
Total New Trips			**31**	**20**	**51**	**38**	**33**	**71**	**701**

The proposed site would generate 51 total trips during the AM peak hour (31 inbound and 20 outbound) and 71 total trips during the PM peak hour (38 inbound and 33 outbound). The site is forecast to generate a total of 701 total daily trips.

Trip Distribution

Utilizing the existing traffic patterns at the intersections of Washington Street with Division Street and 5th Street a trip distribution model was developed for the proposed development. Furthermore, it was assumed that all inbound and outbound traffic associated with the proposed 120 room hotel would utilize the proposed pick-up/drop-off area in front of the development on Division Street. Therefore, inbound vehicles would stop in the drop off area prior to parking in the existing Liberty Square Parking Structure, located to the east of the proposed site on Washington Street. It was assumed that outbound vehicles would exit directly from the Liberty Square Parking Structure after checking out without traveling back to the hotel. The existing traffic patterns indicate the following probable distribution for the proposed development.

AM Peak Hour	PM Peak Hour
44% from and 37% to the north	36% from and 45% to the north
38% from and 43% to the south	43% from and 39% to the south
3% from and 17% to the east	14% from and 7% to the east
15% from and 3% to the west	7% from and 9% to the west

Trips have been assigned to the adjacent roadway network in accordance with this trip distribution model.

Total Future Traffic Volumes

The background and site generated trips have been combined to develop a total future traffic volume scenario. This scenario approximates traffic conditions in two years assuming the proposed development has been built. This scenario is analyzed to determine what, if any, the traffic impacts are to the adjacent roadway network due to the development of the proposed project.

Queuing Analysis

The site plan as proposed would utilize the pick-up/drop-off area along Division Street. This area is approximately 100 feet long and assuming 25 feet per vehicle results in available storage for four vehicles at any time. Tetra Tech obtained information from F.H.I. Inc. regarding the average service rate of vehicles that visit their hotels. Based on their previous experience, a range of approximately 5 to 7 minutes per vehicle was assumed to be appropriate. In these 5 to 7 minutes it is assumed that patrons would park their vehicles in the drop off zone, visit the front desk to check in and then return to their vehicle to park in the Liberty Street Parking structure.

Using an average service rate of 6 minutes per vehicle per parking bay, the pick-up/drop-off area can service up to10 vehicles per hour per parking spot or 40 vehicles per hour for the four vehicles that could queue in the drop off area.

As previously mentioned the proposed site is expected to generate 51 total trips during the AM peak hour (31 inbound and 20 outbound) and 71 total trips during the PM peak hour (38 inbound and 33 outbound). The highest directional trip distribution is the 38 inbound vehicles during the PM peak hour. Given the proposed pick up/drop off area can service up to 40 vehicles per hour sufficient storage would be available during both AM and PM peak hours for the anticipate demand at the hotel.

Level of Service Analysis

Level of Service (LOS) analyses for existing, background and total future traffic conditions for the AM and PM peak hours were performed for the intersections of Washington Street with Division Street and 5th Street.

According to the most recent edition (2000 Edition) of the *Highway Capacity Manual*, level of service is a qualitative measure describing operational conditions of a traffic stream or intersection. Level of service ranges from A to F, with LOS A being the best. LOS D is generally considered to be acceptable. Table 2 presents the criteria for defining the various levels of service for signalized intersections.

Table 2
Level of Service Criteria (Signalized Intersection)

Level of Service	Average Stopped Delay/Vehicle (seconds)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

Note: LOS "D" is considered acceptable in urban/suburban areas.

Intersection of Washington Street and Division Street

The results of the level of service analysis for the signalized intersection of Washington Street and Division Street indicate that under existing conditions, all approaches to the intersection operate at a LOS B during the AM and PM peak hours. The intersection operates at an overall LOS B during both peak traffic periods.

The intersection would continue to operate in a similar manner to the existing conditions with the addition of background and site generated traffic. Therefore, the traffic generated by the proposed development would have a minimal impact on this intersection.

Table 3
AM Peak Hour
Level of Service Analysis for Washington Street and Division Street

Approach	Existing	Background	Future
Northbound Division Street	B	B	B
Eastbound Washington Street	B	B	B
Westbound Washington Street	B	B	B
Overall	**B**	**B**	**B**

Table 4
PM Peak Hour
Level of Service Analysis for Washington Street and Division Street

Approach	Existing	Background	Future
Northbound Division Street	B	B	B
Eastbound Washington Street	B	B	B
Westbound Washington Street	B	B	B
Overall	**B**	**B**	**B**

Intersection of Washington Street and 5th Street

The results of the level of service analysis for the signalized intersection of Washington Street and 5th Street indicate that under existing conditions, all approaches to the intersection operate at a LOS C or better during the AM and PM peak hours. The intersection operates at an overall LOS B during both peak traffic periods.

The intersection would continue to operate in a similar manner to the existing conditions with the addition of background and site generated traffic. Therefore, the traffic generated by the proposed development would have a minimal impact on this intersection.

Table 5
AM Peak Hour
Level of Service Analysis for Washington Street and 5th Street

Approach	Existing	Background	Future
Southbound 5th Street	B	B	B
Eastbound Washington Street	C	C	C
Westbound Washington Street	B	B	B
Overall	**B**	**B**	**B**

Table 6
PM Peak Hour
Level of Service Analysis for Washington Street and 5th Street

Approach	Existing	Background	Future
Northbound Division Street	B	B	B
Eastbound Washington Street	C	C	C
Westbound Washington Street	B	B	B
Overall	**B**	**B**	**B**

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Conclusions

The proposed development will consist of a 120 room hotel. The hotel will not provide any banquet facilities and there will be limited food service available to guests of the hotel. On site parking will not be provided as part of this development. All vehicles are expected to utilize the nearby Liberty Square Parking Structure.

The proposed development is forecast to generate 51 total trips during the AM peak hour (31 inbound and 20 outbound) and 71 total trips during the PM peak hour (38 inbound and 33 outbound). The proposed 100 foot pick up/drop off has the capacity to accommodate up to 40 vehicles per hour which would meet the demands of the inbound peak of 38 vehicles.

Based on level of service analysis, the proposed development will have minimal impacts on the intersections of Washington Street with Division Street and 5th Street.

We hope this letter meets your current transportation engineering needs. Please feel free to contact our office at 810.220.2112 if we can be of further assistance.

Sincerely,

Kelly K. Ferencz, P.E.
Project Manager

Joseph A. Sopoliga, P.E.
Transportation Engineer

:cpl
200-22548-07001R

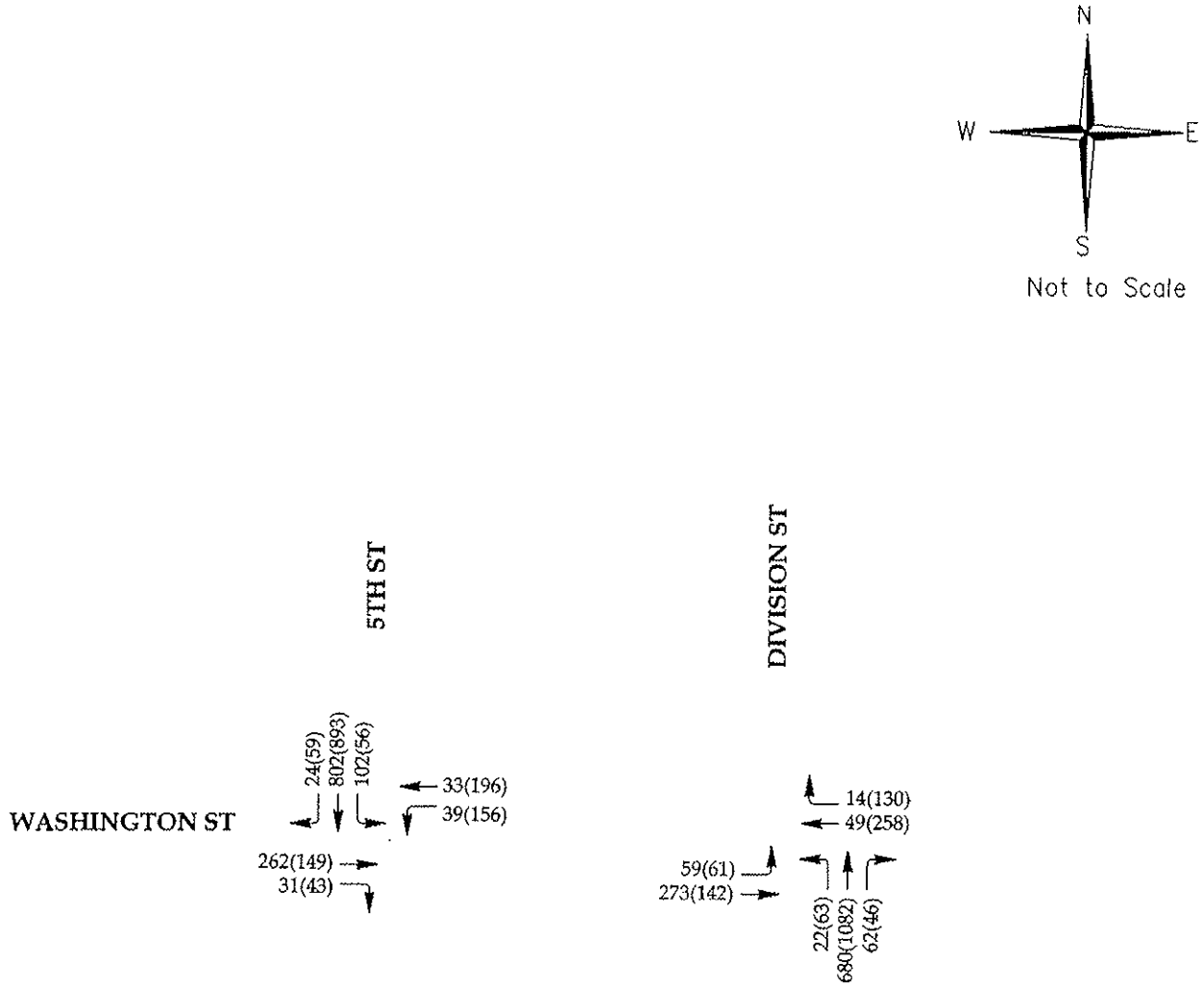
K:\Private Dev\Letters\FHI Metro 202 Hotel TIS.doc

TETRA TECH, INC.

SITE LOCATION MAP

PROJECT NO.
200-22548-07001

FIGURE 1



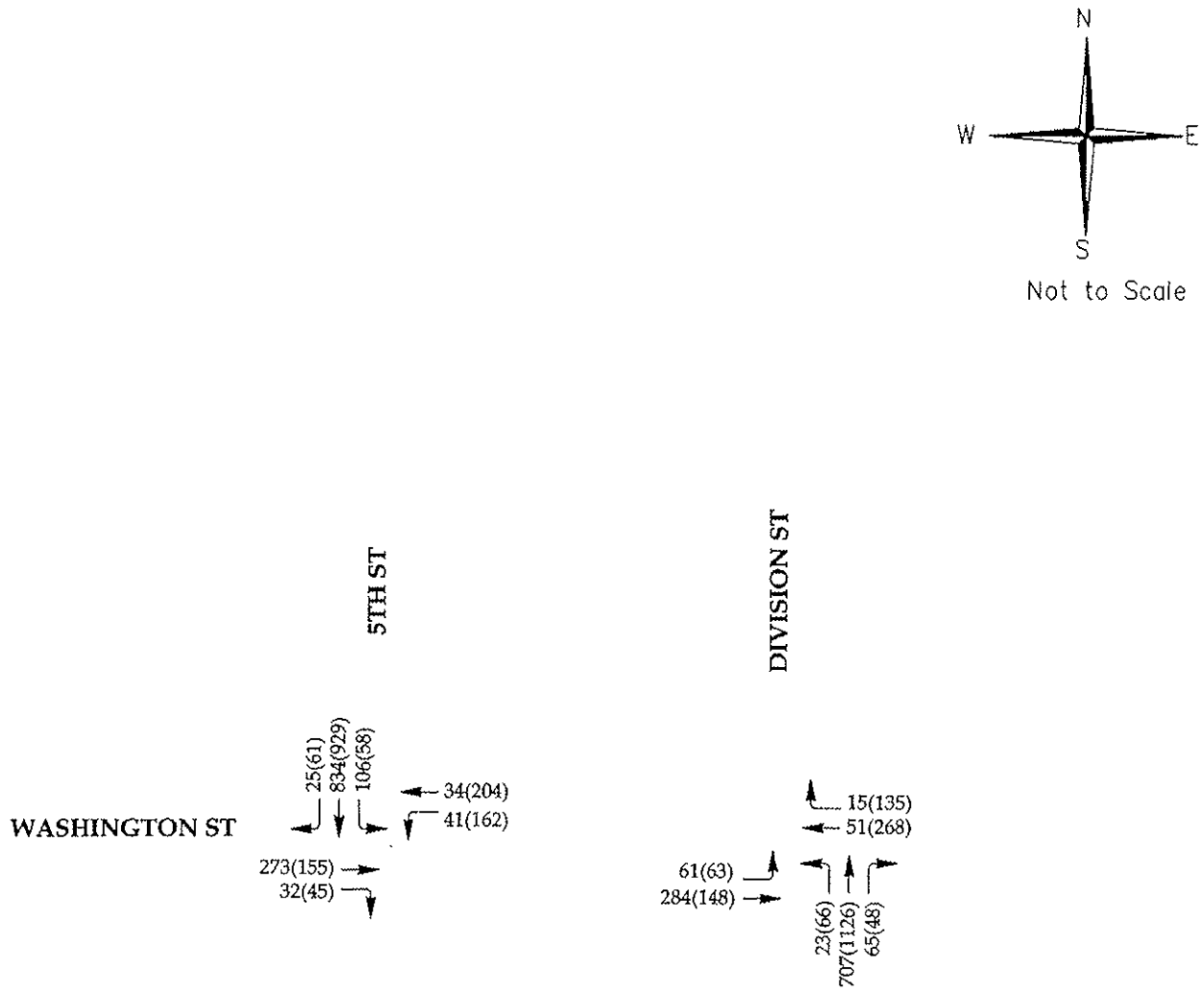
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

TETRA TECH, INC.

EXISTING AM(PM)
PEAK HOUR TRAFFIC VOLUMES

PROJECT NO.
200-22548-07001

FIGURE 2



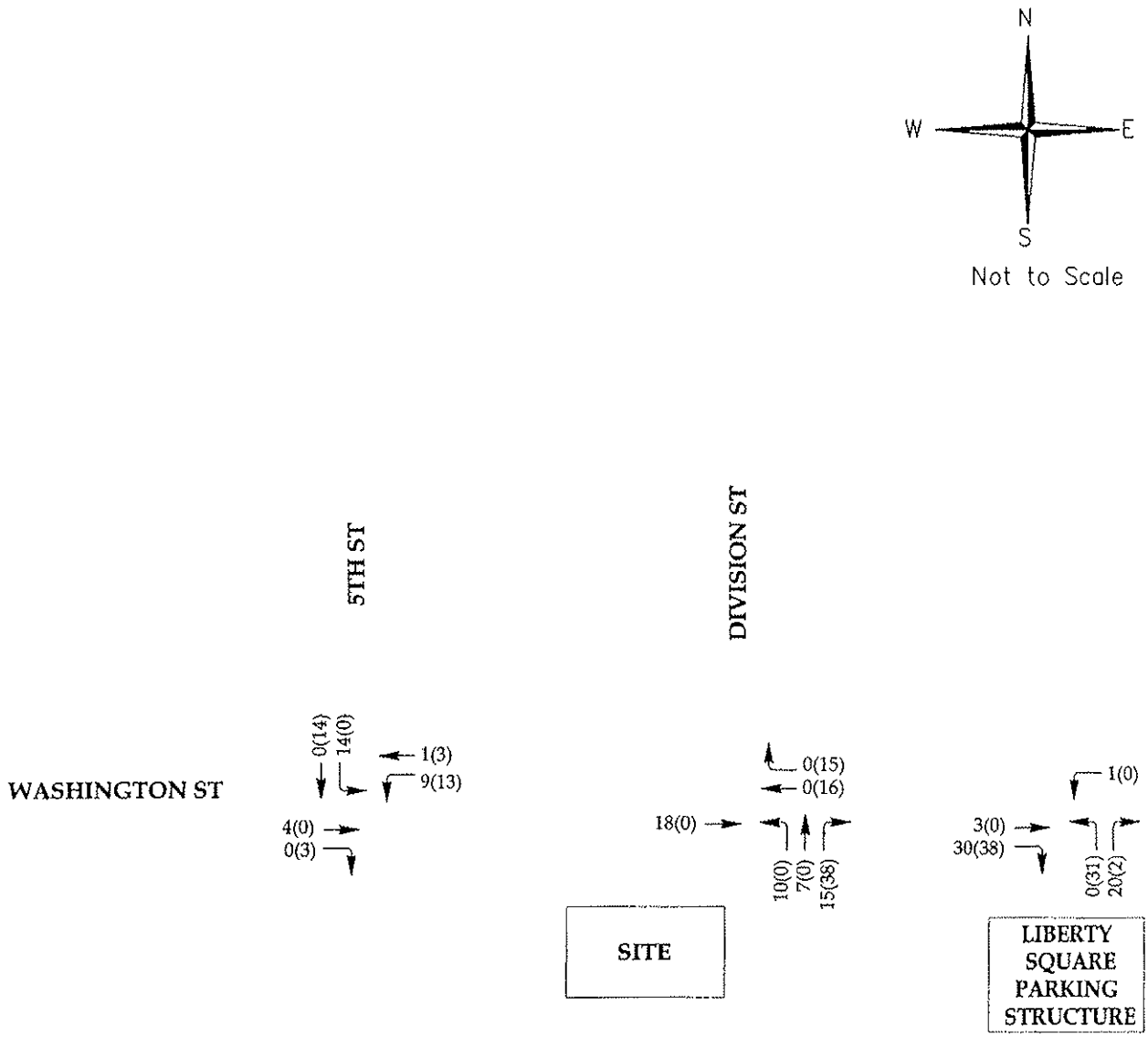
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

TETRA TECH, INC.

BACKGROUND AM(PM)
PEAK HOUR TRAFFIC VOLUMES

PROJECT NO.
200-22548-07001

FIGURE 3



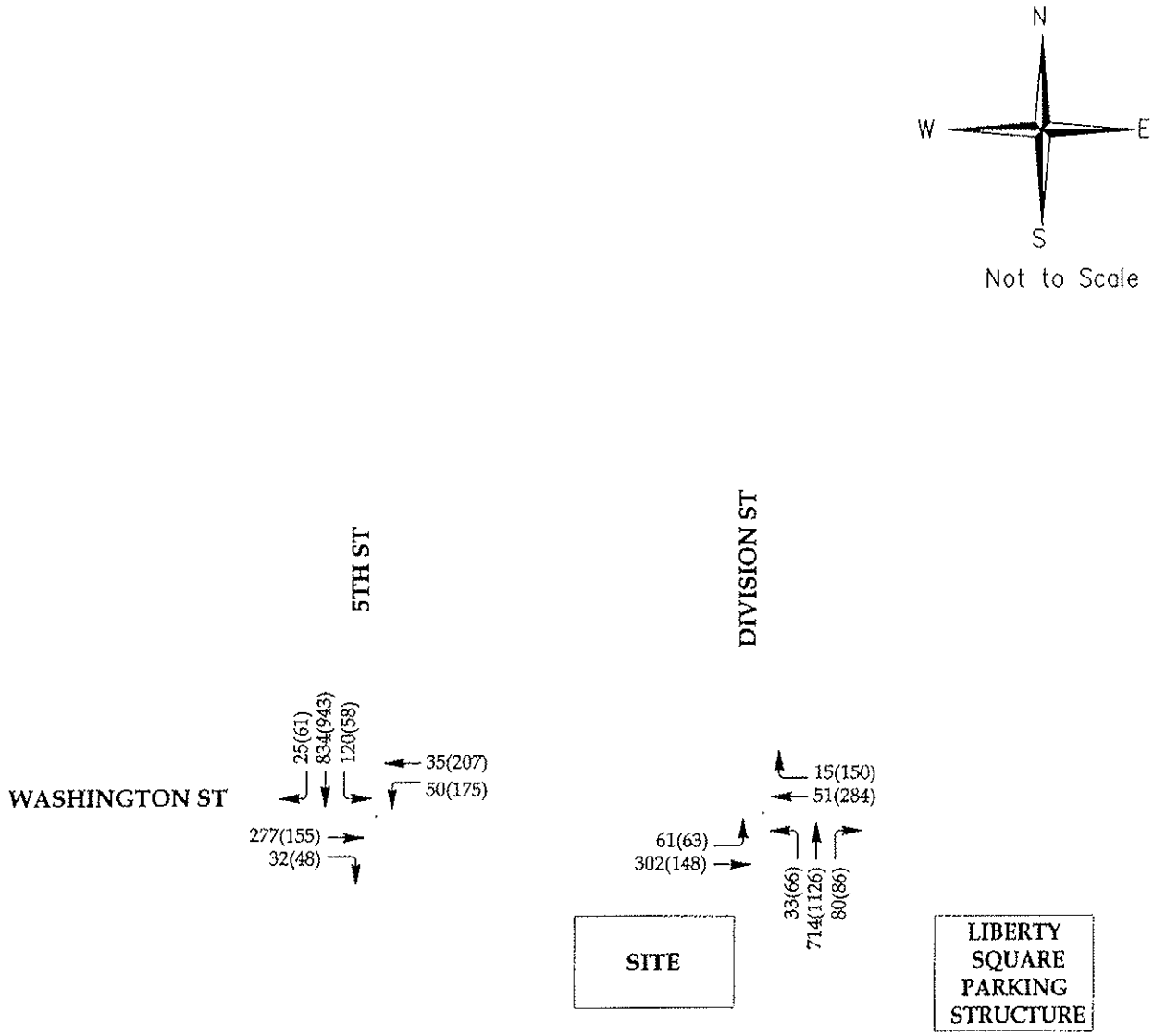
XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

TETRA TECH, INC.

SITE GENERATED AM(PM) PEAK HOUR TRAFFIC VOLUMES

PROJECT NO. 200-22548-07001

FIGURE 4



XX = AM PEAK HOUR
(XX) = PM PEAK HOUR

TETRA TECH, INC.

TOTAL FUTURE AM(PM)
PEAK HOUR TRAFFIC VOLUMES

PROJECT NO.
200-22548-07001

FIGURE 5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	59	273	0	0	49	14	22	680	62	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.86				
Frpb, ped/bikes	1.00	1.00			1.00	0.95		0.99				
Flpb, ped/bikes	0.98	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1626	1739			1739	1354		5848				
Flt Permitted	0.72	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	1230	1739			1739	1354		5848				
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	70	325	0	0	59	17	24	747	68	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	15	0	0	0	0
Lane Group Flow (vph)	70	325	0	0	59	8	0	824	0	0	0	0
Confl. Peds. (#/hr)	10		21	13		23	20		32			
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	560	792			792	617		2664				
v/s Ratio Prot		c0.19			0.03			c0.14				
v/s Ratio Perm	0.06					0.01						
v/c Ratio	0.12	0.41			0.07	0.01		0.31				
Uniform Delay, d1	14.1	16.4			13.8	13.4		15.5				
Progression Factor	0.64	0.60			1.00	1.00		1.00				
Incremental Delay, d2	0.4	1.4			0.2	0.0		0.3				
Delay (s)	9.5	11.2			14.0	13.5		15.8				
Level of Service	A	B			B	B		B				
Approach Delay (s)		10.9			13.9			15.8			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	284	0	0	51	15	23	707	65	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.86				
Frpb, ped/bikes	1.00	1.00			1.00	0.95		0.99				
Flpb, ped/bikes	0.98	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1626	1739			1739	1354		5847				
Flt Permitted	0.72	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	1228	1739			1739	1354		5847				
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	73	338	0	0	61	18	25	777	71	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	10	0	16	0	0	0	0
Lane Group Flow (vph)	73	338	0	0	61	8	0	857	0	0	0	0
Confl. Peds. (#/hr)	10		21	13		23	20		32			
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	559	792			792	617		2684				
v/s Ratio Prot		c0.19			0.04			c0.15				
v/s Ratio Perm	0.06					0.01						
v/c Ratio	0.13	0.43			0.08	0.01		0.32				
Uniform Delay, d1	14.2	16.6			13.8	13.4		15.8				
Progression Factor	0.65	0.60			1.00	1.00		1.00				
Incremental Delay, d2	0.4	1.4			0.2	0.0		0.3				
Delay (s)	9.6	11.4			14.0	13.5		16.0				
Level of Service	A	B			B	B		B				
Approach Delay (s)		11.1			13.9			16.0			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	14.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	302	0	0	51	15	33	714	80	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.86				
Frpb, ped/bikes	1.00	1.00			1.00	0.95		0.99				
Flpb, ped/bikes	0.98	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1626	1739			1739	1354		5821				
Flt Permitted	0.72	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	1228	1739			1739	1354		5821				
Peak-hour factor, PHF	0.84	0.84	0.84	0.83	0.83	0.83	0.91	0.91	0.91	0.92	0.92	0.92
Adj. Flow (vph)	73	360	0	0	61	18	36	785	88	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	10	0	20	0	0	0	0
Lane Group Flow (vph)	73	360	0	0	61	8	0	889	0	0	0	0
Confl. Peds. (#/hr)	10		21	13		23	20		32			
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	559	792			792	617		2652				
v/s Ratio Prot		c0.21			0.04			c0.15				
v/s Ratio Perm	0.06					0.01						
v/c Ratio	0.13	0.45			0.08	0.01		0.34				
Uniform Delay, d1	14.2	16.8			13.8	13.4		15.7				
Progression Factor	0.68	0.62			1.00	1.00		1.00				
Incremental Delay, d2	0.4	1.6			0.2	0.0		0.3				
Delay (s)	10.0	12.1			14.0	13.5		16.1				
Level of Service	B	B			B	B		B				
Approach Delay (s)		11.8			13.9			16.1			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	14.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	142	0	0	258	130	63	1082	46	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.86				
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00				
Flpb, ped/bikes	0.97	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1608	1739			1739	1342		5903				
Flt Permitted	0.43	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	734	1739			1739	1342		5903				
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	72	167	0	0	363	183	72	1230	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	12	0	6	0	0	0	0
Lane Group Flow (vph)	72	167	0	0	363	171	0	1348	0	0	0	0
Conft. Peds. (#/hr)	35		50	32		28	25		36	25		15
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	334	792			792	611		2689				
v/s Ratio Prot		0.10			c0.21			c0.23				
v/s Ratio Perm	0.10					0.13						
v/c Ratio	0.22	0.21			0.46	0.28		0.50				
Uniform Delay, d1	14.8	14.8			16.9	15.3		17.3				
Progression Factor	0.61	0.63			1.00	1.00		1.00				
Incremental Delay, d2	1.4	0.6			1.9	1.1		0.7				
Delay (s)	10.4	9.9			18.8	16.4		18.0				
Level of Service	B	A			B	B		B				
Approach Delay (s)		10.0			18.0			18.0			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	17.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	148	0	0	268	135	66	1126	48	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.86				
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00				
Flpb, ped/bikes	0.97	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1610	1739			1739	1342		5902				
Flt Permitted	0.42	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	712	1739			1739	1342		5902				
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	74	174	0	0	377	190	75	1280	55	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	10	0	6	0	0	0	0
Lane Group Flow (vph)	74	174	0	0	377	180	0	1404	0	0	0	0
Confl. Peds. (#/hr)	35		50	32		28	25		36	25		15
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	324	792			792	611		2689				
v/s Ratio Prot		0.10			c0.22			c0.24				
v/s Ratio Perm	0.10					0.13						
v/c Ratio	0.23	0.22			0.48	0.29		0.52				
Uniform Delay, d1	14.9	14.8			17.0	15.4		17.5				
Progression Factor	0.60	0.63			1.00	1.00		1.00				
Incremental Delay, d2	1.5	0.6			2.0	1.2		0.7				
Delay (s)	10.5	9.9			19.1	16.6		18.2				
Level of Service	B	A			B	B		B				
Approach Delay (s)		10.1			18.3			18.2			0.0	
Approach LOS		B			B			B			A	

Intersection Summary			
HCM Average Control Delay	17.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	148	0	0	284	150	66	1126	86	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.86				
Frpb, ped/bikes	1.00	1.00			1.00	0.94		0.99				
Flpb, ped/bikes	0.98	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1613	1739			1739	1342		5857				
Flt Permitted	0.40	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	676	1739			1739	1342		5857				
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	74	174	0	0	400	211	75	1280	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	10	0	12	0	0	0	0
Lane Group Flow (vph)	74	174	0	0	400	201	0	1441	0	0	0	0
Confl. Peds. (#/hr)	35		50	32		28	25		36	25		15
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	308	792			792	611		2668				
v/s Ratio Prot		0.10			c0.23			c0.25				
v/s Ratio Perm	0.11					0.15						
v/c Ratio	0.24	0.22			0.51	0.33		0.54				
Uniform Delay, d1	15.0	14.8			17.3	15.7		17.7				
Progression Factor	0.60	0.63			1.00	1.00		1.00				
Incremental Delay, d2	1.7	0.6			2.3	1.4		0.8				
Delay (s)	10.7	9.9			19.6	17.1		18.5				
Level of Service	B	A			B	B		B				
Approach Delay (s)		10.1			18.8			18.5			0.0	
Approach LOS		B			B			B			A	

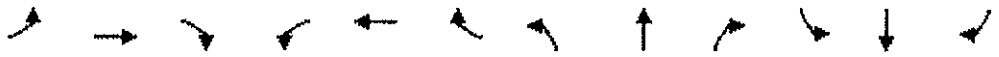
Intersection Summary			
HCM Average Control Delay	17.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	262	31	39	33	0	0	0	0	102	802	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.99	1.00						1.00	
Frt		0.99		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		1644		1580	1425						4302	
Flt Permitted		1.00		0.44	1.00						0.99	
Satd. Flow (perm)		1644		726	1425						4302	
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	1.00	1.00	1.00	0.91	0.91	0.91
Adj. Flow (vph)	0	301	36	45	38	0	0	0	0	112	881	26
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	332	0	45	38	0	0	0	0	0	1016	0
Confl. Peds. (#/hr)	11		20	10		24				3		10
Parking (#/hr)					10						10	
Turn Type				Perm						Split		
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		34.9		34.9	34.9						46.0	
Effective Green, g (s)		34.9		34.9	34.9						46.0	
Actuated g/C Ratio		0.39		0.39	0.39						0.51	
Clearance Time (s)		5.1		5.1	5.1						4.0	
Lane Grp Cap (vph)		638		282	553						2199	
v/s Ratio Prot		c0.20			0.03						c0.24	
v/s Ratio Perm				0.06								
v/c Ratio		0.52		0.16	0.07						0.46	
Uniform Delay, d1		21.1		18.0	17.3						14.1	
Progression Factor		1.00		0.72	0.73						1.00	
Incremental Delay, d2		3.0		1.2	0.2						0.7	
Delay (s)		24.2		14.1	12.9						14.8	
Level of Service		C		B	B						B	
Approach Delay (s)		24.2			13.5			0.0			14.8	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	52.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	273	32	41	34	0	0	0	0	106	834	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.99	1.00						1.00	
Frt		0.99		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		1645		1580	1425						4302	
Flt Permitted		1.00		0.42	1.00						0.99	
Satd. Flow (perm)		1645		700	1425						4302	
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	1.00	1.00	1.00	0.91	0.91	0.91
Adj. Flow (vph)	0	314	37	48	40	0	0	0	0	116	916	27
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	346	0	48	40	0	0	0	0	0	1056	0
Confl. Peds. (#/hr)	11		20	10		24				3		10
Parking (#/hr)					10						10	
Turn Type				Perm						Split		
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		34.9		34.9	34.9						46.0	
Effective Green, g (s)		34.9		34.9	34.9						46.0	
Actuated g/C Ratio		0.39		0.39	0.39						0.51	
Clearance Time (s)		5.1		5.1	5.1						4.0	
Lane Grp Cap (vph)		638		271	553						2199	
v/s Ratio Prot		c0.21			0.03						c0.25	
v/s Ratio Perm				0.07								
v/c Ratio		0.54		0.18	0.07						0.48	
Uniform Delay, d1		21.4		18.1	17.4						14.3	
Progression Factor		1.00		0.72	0.74						1.00	
Incremental Delay, d2		3.3		1.4	0.3						0.8	
Delay (s)		24.7		14.5	13.0						15.0	
Level of Service		C		B	B						B	
Approach Delay (s)		24.7			13.9			0.0			15.0	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	17.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	277	32	50	35	0	0	0	0	120	834	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		1.00		1.00	1.00						1.00	
Flpb, ped/bikes		1.00		0.99	1.00						1.00	
Frt		0.99		1.00	1.00						1.00	
Flt Protected		1.00		0.95	1.00						0.99	
Satd. Flow (prot)		1645		1581	1425						4300	
Flt Permitted		1.00		0.42	1.00						0.99	
Satd. Flow (perm)		1645		692	1425						4300	
Peak-hour factor, PHF	0.87	0.87	0.87	0.86	0.86	0.86	1.00	1.00	1.00	0.91	0.91	0.91
Adj. Flow (vph)	0	318	37	58	41	0	0	0	0	132	916	27
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	0	0	3	0
Lane Group Flow (vph)	0	350	0	58	41	0	0	0	0	0	1072	0
Confl. Peds. (#/hr)	11		20	10		24				3		10
Parking (#/hr)					10						10	
Turn Type				Perm						Split		
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		34.9		34.9	34.9						46.0	
Effective Green, g (s)		34.9		34.9	34.9						46.0	
Actuated g/C Ratio		0.39		0.39	0.39						0.51	
Clearance Time (s)		5.1		5.1	5.1						4.0	
Lane Grp Cap (vph)		638		268	553						2198	
v/s Ratio Prot		c0.21			0.03						c0.25	
v/s Ratio Perm				0.08								
v/c Ratio		0.55		0.22	0.07						0.49	
Uniform Delay, d1		21.4		18.4	17.4						14.3	
Progression Factor		1.00		0.80	0.82						1.00	
Incremental Delay, d2		3.4		1.8	0.3						0.8	
Delay (s)		24.8		16.6	14.4						15.1	
Level of Service		C		B	B						B	
Approach Delay (s)		24.8			15.7			0.0			15.1	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	17.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	149	43	156	196	0	0	0	0	56	893	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		0.99		1.00	1.00						0.99	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Frt		0.97		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1607		1555	1425						4270	
Flt Permitted		1.00		0.55	1.00						1.00	
Satd. Flow (perm)		1607		895	1425						4270	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	1.00	1.00	1.00	0.87	0.87	0.87
Adj. Flow (vph)	0	189	54	197	248	0	0	0	0	64	1026	68
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	8	0
Lane Group Flow (vph)	0	231	0	197	248	0	0	0	0	0	1150	0
Confl. Peds. (#/hr)	28		25	22		36				20		33
Parking (#/hr)					10						10	
Turn Type				Perm						Split		
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		34.9		34.9	34.9						46.0	
Effective Green, g (s)		34.9		34.9	34.9						46.0	
Actuated g/C Ratio		0.39		0.39	0.39						0.51	
Clearance Time (s)		5.1		5.1	5.1						4.0	
Lane Grp Cap (vph)		623		347	553						2182	
v/s Ratio Prot		0.14			0.17						c0.27	
v/s Ratio Perm				c0.22								
v/c Ratio		0.37		0.57	0.45						0.53	
Uniform Delay, d1		19.7		21.6	20.4						14.7	
Progression Factor		1.00		0.50	0.52						1.00	
Incremental Delay, d2		1.7		6.0	2.4						0.9	
Delay (s)		21.4		16.9	13.1						15.6	
Level of Service		C		B	B						B	
Approach Delay (s)		21.4			14.8			0.0			15.6	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	155	45	162	204	0	0	0	0	58	929	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		0.99		1.00	1.00						0.99	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Frt		0.97		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1606		1556	1425						4270	
Flt Permitted		1.00		0.53	1.00						1.00	
Satd. Flow (perm)		1606		876	1425						4270	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	1.00	1.00	1.00	0.87	0.87	0.87
Adj. Flow (vph)	0	196	57	205	258	0	0	0	0	67	1068	70
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	241	0	205	258	0	0	0	0	0	1198	0
Confl. Peds. (#/hr)	28		25	22		36				20		33
Parking (#/hr)					10						10	
Turn Type				Perm						Split		
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		34.9		34.9	34.9						46.0	
Effective Green, g (s)		34.9		34.9	34.9						46.0	
Actuated g/C Ratio		0.39		0.39	0.39						0.51	
Clearance Time (s)		5.1		5.1	5.1						4.0	
Lane Grp Cap (vph)		623		340	553						2182	
v/s Ratio Prot		0.15			0.18						c0.28	
v/s Ratio Perm				c0.23								
v/c Ratio		0.39		0.60	0.47						0.55	
Uniform Delay, d1		19.8		22.0	20.6						14.9	
Progression Factor		1.00		0.50	0.52						1.00	
Incremental Delay, d2		1.8		6.9	2.5						1.0	
Delay (s)		21.7		18.0	13.2						15.9	
Level of Service		C		B	B						B	
Approach Delay (s)		21.7			15.3			0.0			15.9	
Approach LOS		C			B			A			B	

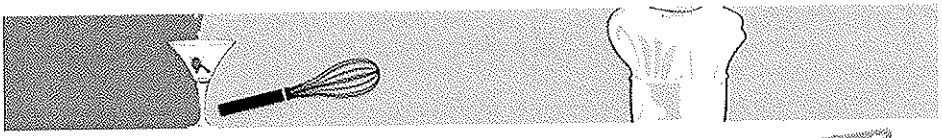
Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	155	48	175	207	0	0	0	0	58	943	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.1		5.1	5.1						4.0	
Lane Util. Factor		1.00		1.00	1.00						0.91	
Frpb, ped/bikes		0.99		1.00	1.00						0.99	
Flpb, ped/bikes		1.00		0.98	1.00						1.00	
Frt		0.97		1.00	1.00						0.99	
Flt Protected		1.00		0.95	1.00						1.00	
Satd. Flow (prot)		1602		1557	1425						4271	
Flt Permitted		1.00		0.53	1.00						1.00	
Satd. Flow (perm)		1602		868	1425						4271	
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79	1.00	1.00	1.00	0.87	0.87	0.87
Adj. Flow (vph)	0	196	61	222	262	0	0	0	0	67	1084	70
RTOR Reduction (vph)	0	12	0	0	0	0	0	0	0	0	7	0
Lane Group Flow (vph)	0	245	0	222	262	0	0	0	0	0	1214	0
Confl. Peds. (#/hr)	28		25	22		36				20		33
Parking (#/hr)					10						10	
Turn Type				Perm						Split		
Protected Phases		4			8					6	6	
Permitted Phases				8								
Actuated Green, G (s)		34.9		34.9	34.9						46.0	
Effective Green, g (s)		34.9		34.9	34.9						46.0	
Actuated g/C Ratio		0.39		0.39	0.39						0.51	
Clearance Time (s)		5.1		5.1	5.1						4.0	
Lane Grp Cap (vph)		621		337	553						2183	
v/s Ratio Prot		0.15			0.18						c0.28	
v/s Ratio Perm				c0.26								
v/c Ratio		0.39		0.66	0.47						0.56	
Uniform Delay, d1		19.9		22.7	20.7						15.0	
Progression Factor		1.00		0.49	0.51						1.00	
Incremental Delay, d2		1.9		8.6	2.5						1.0	
Delay (s)		21.8		19.6	13.0						16.1	
Level of Service		C		B	B						B	
Approach Delay (s)		21.8			16.0			0.0			16.1	
Approach LOS		C			B			A			B	

Intersection Summary			
HCM Average Control Delay	16.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.1
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



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Hyatt Launches Online Check-In For All Guests

Hyatt Hotels & Resorts

January 14, 2008

For today's multi-tasking travelers, time is gold. To help ease the pace, Hyatt Hotels & Resorts has created "Web-In" and "Web-Out," convenient, online check-in and check-out systems available at over 100 of its North American properties through the Hyatt.com website. As company-wide services available to all Hyatt guests, both features represent industry firsts. "Web-Out" introduces an all-new benefit, while "Web-In" was previously available only to Hyatt's Gold Passport loyalty members.

Operations are user friendly. A "Check-In" button on the Hyatt.com homepage enables guests to check in via the Internet after 1:00 pm on their day of arrival. Room keys may be collected from hotel-lobby kiosks at each guest's convenience. Hyatt's "Web-Out" option is made available through e-mail. On the morning of a scheduled departure date, the guest will receive a message to review their account with an option to proceed with check out via their PDA or laptop. Once the check out function is complete, the guest will then be emailed a copy of a folio containing a "0" balance. This is of high importance to business travelers as it is typically required for expense purposes.

"These new optional benefits are part of Hyatt's continued effort to provide a sense of ease for our customers and also reflects our commitment to raising the bar on industry standards," said Gary Dollens, Senior Vice President of Operations. "Hyatt's dedication to putting guests first makes creative solutions and guest convenience high priorities. We look forward to increased demand for these services from our customers who value efficient options when traveling."

Gold Passport Members using Hyatt.com will continue to enjoy additional perks, such as an initial reservation confirmation message from E-concierge, a 7-day reminder message, and a day-of-arrival e-mail that includes a direct link to "Web-In." Online check-in time for Diamond Passport members will maintain its elite status of 9:00 am.

As another industry first, to be introduced in 2008, guests will soon be able to pre-select their guestroom of choice online or at the check-in kiosk, through enhancements introduced to the "Web-In" feature. Graphic images of floor plan layouts and room availability will make selection as simple as choosing an airline seat. In addition, every guest who makes a reservation online will soon receive a day-of-arrival email with a direct "Web-In" link.

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TETRA TECH, INC.

MEMORANDUM

TO: Ira Ury

FROM: Kelly K. Ferencz, P.E.
Joseph A. Sopoliga, P.E.

DATE: September 17, 2007

SUBJECT: Proposed Hotel at Metro 202 - UPDATED

The following are responses to City of Ann Arbor questions regarding the traffic impact study for the proposed development:

Issue 1: *Traffic Study correction including trip generation change or clarification on rooms defined as occupied or unoccupied or % of occupied.*

Response 1: The trip generation forecast assumes there are 120 rooms while utilizing the trip generation forecast for 'rooms'. This land use assumes that the hotel would be 83% occupied and FHI has indicated that on an average good day the hotel would be 70% occupied. Therefore the trip generation would prove conservative. Accepted practice for preparing a traffic impact analysis is to evaluate a typical peak period. After conversations with Pat Crawly at the City of Ann Arbor, he is in agreement.

Issue 2: *The drop off lane should account for random drop off and arrivals when calculating number of spaces.*

Response 2: The drop off/pick up calculations assumed a conservative demand given the analysis clarified in Issue 1. In addition, it was assumed that all vehicles exiting in the AM peak hour (20 vehicles) and arriving in the PM peak hour (38 vehicles) would use the drop off lane rather than using available on street parking that could better suit their route given the one way street network or parking at the Liberty Street Parking Structure prior to checking in. Additionally, all of the vehicles arriving in the PM peak hour are not checking into the hotel. Therefore, based on conversations with Pat Cawley it is assumed that 10% (or approximately 4 vehicles) will not use the drop off area during the PM peak hour but instead use other area parking to get to the hotel. Therefore the updated peak demand of the drop off zone would be 34 vehicles.

Based on this assumption, an additional queue analysis was completed assuming a 5 minute, 6 minute and 7 minute service rate for a guest to check into the hotel and return to their vehicles.

5 minute service rate: Using an average service rate of 5 minutes per vehicle per parking bay the drop off area can service up to 12 vehicles per hour per parking spot or 48 vehicles total in the proposed drop off area.

6 minute service rate: Using an average service rate of 6 minutes per vehicle per parking bay the drop off area can service up to 10 vehicles per hour per parking spot or 40 vehicles total in the proposed drop off area.

7 minute service rate: Using an average service rate of 7 minutes per vehicle per parking bay the drop off area can service up to 8 vehicles per hour per parking spot or 32 vehicles total in the proposed drop off area.

The queuing analysis presented above indicates that with a 5 minute and 6 minute service rate more than adequate capacity is available in the drop off zone during the weekday PM peak hour. With a 7 minute service rate, the drop off area would be slightly overloaded. However, there is a minimum probability of having all visitors to the hotel experiencing a 7 minute service rate at the front desk.

Issue 3: *Typo – the report calls Fifth Street the correct name is Fifth Avenue.*

Response 3: If a revision to the study is required, this typo will be corrected throughout the report.

Issue 4: *Need to dimension lanes across S. Division Street.*

Response 4: Meier Architects and/or Site Engineer to incorporate this comment on their site plan. In addition, Synchro analysis is attached illustrating that the conversion of Northbound Division Street from four lanes to three lanes would have a minimal impact on the operation of the Division Street and Washington Street intersection.

Issue 5: *Does the traffic study include trips between the Hotel and the designated parking spaces?*

Response 5: Our analysis assumes that all PM peak hour inbound traffic associated with the proposed hotel would be checking in and utilizing the proposed pick-up/drop-off area in front of the development on Division Street. Therefore, inbound vehicles would stop in the drop off area prior to parking in the existing Liberty Square Parking Structure, located to the east of the proposed site on Washington Street. It was assumed that PM peak hour outbound vehicles would exit directly from the Liberty Square Parking Structure.

During the AM peak hour, it was assumed that all inbound vehicles would travel directly to the parking structure and walk to the proposed hotel as they are most likely not checking into the hotel. The analysis assumes that all outbound vehicles in the AM peak hour would exit the structure and proceed to the drop off area to complete their checkout.

These volumes were accounted for in our analysis however are not differentiated in Figure 4. If a revision to the traffic study is required, the difference will be identified.

Issue 6: *Does the Hotel plan to have a shuttle service? If so, where is it parked?*

Response 6: It is our understanding that there will not be shuttle service provided by the proposed hotel.

Issue 7: *Does the Hotel plan to have a maintenance vehicle? If so, where is it parked?*

Response 7: It is our understanding that there will not be a maintenance vehicle.

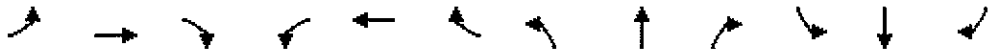
Issue 8: *Why is the trip count so different between the apartment project (645) and this project (701)?*

Response 8: All traffic forecasts were completed using information contained in the most recent edition of *Trip Generation (7th Edition)* published by the Institute of Transportation Engineers. Different developments have different trip generation characteristics for the peak hours and total daily traffic volume forecast. One possible explanation would be that a hotel would have traffic that would be generated by employees which an apartment project would not experience. Further, the apartment development also contained retail and bank uses which experience 'pass-by' or 'diverted trips' which a hotel would not experience.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	148	0	0	284	150	66	1126	86	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.94		0.99				
Flpb, ped/bikes	0.98	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1613	1739			1739	1342		4648				
Flt Permitted	0.40	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	676	1739			1739	1342		4648				
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	74	174	0	0	400	211	75	1280	98	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	12	0	9	0	0	0	0
Lane Group Flow (vph)	74	174	0	0	400	199	0	1444	0	0	0	0
Confl. Peds. (#/hr)	35		50	32		28	25		36	25		15
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	308	792			792	611		2117				
v/s Ratio Prot		0.10			c0.23			c0.31				
v/s Ratio Perm	0.11					0.15						
v/c Ratio	0.24	0.22			0.51	0.33		0.68				
Uniform Delay, d1	15.0	14.8			17.3	15.7		19.4				
Progression Factor	0.60	0.63			1.00	1.00		1.00				
Incremental Delay, d2	1.7	0.6			2.3	1.4		1.8				
Delay (s)	10.7	9.9			19.6	17.1		21.2				
Level of Service	B	A			B	B		C				
Approach Delay (s)		10.1			18.7			21.2			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM Average Control Delay	19.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	63	148	0	0	268	135	66	1126	48	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	10	9	10	10	12	12	12	12
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Util. Factor	1.00	1.00			1.00	1.00		0.91				
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00				
Flpb, ped/bikes	0.97	1.00			1.00	1.00		1.00				
Frt	1.00	1.00			1.00	0.85		0.99				
Flt Protected	0.95	1.00			1.00	1.00		1.00				
Satd. Flow (prot)	1610	1739			1739	1342		4684				
Flt Permitted	0.42	1.00			1.00	1.00		1.00				
Satd. Flow (perm)	712	1739			1739	1342		4684				
Peak-hour factor, PHF	0.85	0.85	0.85	0.71	0.71	0.71	0.88	0.88	0.88	0.92	0.92	0.92
Adj. Flow (vph)	74	174	0	0	377	190	75	1280	55	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	12	0	5	0	0	0	0
Lane Group Flow (vph)	74	174	0	0	377	178	0	1405	0	0	0	0
Confl. Peds. (#/hr)	35		50	32		28	25		36	25		15
Turn Type	Perm					Perm	Split					
Protected Phases		4			8		2	2				
Permitted Phases	4					8						
Actuated Green, G (s)	41.0	41.0			41.0	41.0		41.0				
Effective Green, g (s)	41.0	41.0			41.0	41.0		41.0				
Actuated g/C Ratio	0.46	0.46			0.46	0.46		0.46				
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0				
Lane Grp Cap (vph)	324	792			792	611		2134				
v/s Ratio Prot		0.10			c0.22			c0.30				
v/s Ratio Perm	0.10					0.13						
v/c Ratio	0.23	0.22			0.48	0.29		0.66				
Uniform Delay, d1	14.9	14.8			17.0	15.4		19.1				
Progression Factor	0.60	0.63			1.00	1.00		1.00				
Incremental Delay, d2	1.5	0.6			2.0	1.2		1.6				
Delay (s)	10.5	9.9			19.1	16.6		20.7				
Level of Service	B	A			B	B		C				
Approach Delay (s)		10.1			18.2			20.7			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group