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MEMORANDUM

To:	Raney Planning and Management	**Date:**	July 28, 2009
Attn:	Nick Pappani	**Project:**	Bohemia Retail TIAR
From:	Kamesh Vedula		
Re:	Hulbert Way Driveway Project Site Access Intersection	**Job No.:**	25-5676-04
		File No.:	C1313MEM004.DOC
CC:	Paul Miller		

INTRODUCTION

This technical memorandum was prepared to respond to County's concerns regarding the operation of the Hulbert Way/Private access easement intersection for the proposed Bohemia Retail project. As depicted on the attached drawing, primary access to/from the project would be via a private access easement that connects to Hulbert Way at its eastern end. Additionally, the existing Plaza project also has one of its access point at the eastern end of Hulbert Way. The draft Traffic Impact Analysis Report prepared for the proposed Bohemia Retail project concluded that the Two Way Stop Controlled (TWSC) Hulbert Way/Bohemia Access/Plaza Access intersection would operate at unacceptable LOS under both Short Term Plus Project (Existing + Approved Pending Projects + Project) and Cumulative Plus Project (Year 2030) conditions. This unacceptable LOS is due to the delay projected for the traffic exiting the Plaza project, particularly the outbound left turns, based on the stand-alone TWSC intersection operations at the Hulbert Way/Bohemia Access/Plaza Access intersection. Note that the Plaza Access Driveway is one of the stop controlled approaches, with access to the overflow parking and the existing business being the other stop controlled approach at the Hulbert Way/Bohemia Access/Plaza Access intersection.

The SR 49/Hulbert Way traffic signal (located approximately 175 feet west of the Hulbert Way/Bohemia Access/Plaza Access intersection will meter the inbound flow onto Hulbert Way likely creating gaps for the outbound left turns on the Plaza Access Driveway. However, this characteristic is not accurately reflected in the delay and LOS calculations at the Hulbert Way/Bohemia Access/Plaza Access intersection under the stand-alone intersection analysis methodology. Therefore, a simulation model that represents this characteristic was created. The software, methodology utilized and results from the simulation model analysis is presented within the subsequent sections of the memo.

METHODOLOGY

Operations at the Hulbert Way/Bohemia Access/Plaza Access intersection were evaluated using VISSIM simulation software. Since, the unacceptable LOS was due to the delay experienced by the outbound left turn vehicles, this analysis focused on the outbound left turn delay. Additionally, the right turns (from the Plaza Access Driveway to Bohemia Retail Project) are expected to be minimal and will improve the approach delay. The delay for the outbound left turn vehicles along the Plaza Access Driveway were based on an average taken from 5 simulation runs (typically Caltrans requirement) from VISSIM.

Two Bohemia Retail project alternatives were evaluated within the study. This evaluation was performed for the Cumulative Plus Project PM peak hour conditions for the project alternative (Discount Superstore) that generated more trips.

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The signal timing at the SR 49/Hulbert Way intersection for the Cumulative Plus Project PM peak hour conditions was obtained from the Synchro model set up for evaluating operations along the SR 49 corridor.

OUTBOUND LEFT TURN VEHICLE DELAY ALONG PLAZA ACCESS DRIVEWAY

Table 1 shows the average delay for the outbound left turn vehicles along the Plaza Access Driveway.

TABLE 1
AVERAGE DELAY
Outbound Lefts along Plaza Access Driveway

Run #	Delay (seconds)
Run 1	23.7
Run 2	20.0
Run 3	24.6
Run 4	17.3
Run 5	20.1
Average Delay	**21.1**

As shown in Table 1, the average delay projected for the outbound left turns along the Plaza Access Driveway is 21.1 seconds, which translates to LOS C conditions. Therefore, it can be concluded that with the metering created by the SR 49/Hulbert Way traffic signal, adequate gaps will be available for the outbound left turns along the Plaza Access Driveway resulting in the acceptable operations.

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Exhibit Depicting the Hulbert Way/Bohemia Access/Plaza Access intersection

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VISSIM ANALYSIS WORKSHEETS

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Table of Delay

File: C:\Documents and Settings\employee\Desktop\TWSC\Cumulative Plus Project_Walmart_PM.inp
Comment:
Date: Tuesday, July 14, 2009 10:52:37 PM
VISSIM: 5.10-05 [17268]

No. 1: Travel time section(s) 1
No. 2: Travel time section(s) 2

Time; Delay; Stopd; Stops; #Veh; Pers.; #Pers; Delay; Stopd; Stops; #Veh; Pers.; #Pers;
VehC; All;;;;;; All;;;;;;
No.:; 1; 1; 1; 1; 1; 1; 2; 2; 2; 2; 2; 2;
900;
1800; 34.0; 20.1; 2.47; 15; 34.0; 15; 39.1; 22.5; 3.06; 16; 39.1; 16;
2700; 17.6; 8.8; 2.00; 14; 17.6; 14; 11.6; 3.5; 1.58; 12; 11.6; 12;
3600; 10.9; 2.4; 1.58; 12; 10.9; 12; 13.7; 4.6; 1.80; 10; 13.7; 10;
4500; 27.1; 15.9; 2.56; 9; 27.1; 9; 26.0; 14.7; 2.11; 18; 26.0; 18;
Total; 22.6; 11.9; 2.14; 50; 22.6; 50; 24.5; 12.7; 2.21; 56; 24.5; 56;

Table of Delay

File: C:\Documents and Settings\employee\Desktop\TWSC\Cumulative Plus Project_Walmart_PM.inp
Comment:
Date: Tuesday, July 14, 2009 11:03:21 PM
VISSIM: 5.10-05 [17268]

No. 1: Travel time section(s) 1
No. 2: Travel time section(s) 2

Time;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;
VehC;	All;;;;;;						All;;;;;;					
No.:;	1;	1;	1;	1;	1;	1;	2;	2;	2;	2;	2;	2;
900;												
1800;	17.3;	7.4;	2.06;	17;	17.3;	17;	15.9;	4.4;	2.09;	11;	15.9;	11;
2700;	15.6;	5.6;	1.65;	17;	15.6;	17;	13.5;	3.7;	1.81;	16;	13.5;	16;
3600;	28.0;	17.0;	2.09;	11;	28.0;	11;	39.2;	22.6;	2.57;	14;	39.2;	14;
4500;	17.0;	7.2;	1.80;	10;	17.0;	10;	15.3;	8.2;	1.46;	13;	15.3;	13;
Total;	18.9;	8.7;	1.89;	55;	18.9;	55;	21.1;	9.8;	1.98;	54;	21.1;	54;

Table of Delay

File: C:\Documents and Settings\employee\Desktop\TWSC\Cumulative Plus Project_Walmart_PM.inp
Comment:
Date: Tuesday, July 14, 2009 11:05:41 PM
VISSIM: 5.10-05 [17268]

No. 1: Travel time section(s) 1
No. 2: Travel time section(s) 2

Time;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;
VehC;	All;;;;;;						All;;;;;;					
No.:;	1;	1;	1;	1;	1;	1;	2;	2;	2;	2;	2;	2;
900;												
1800;	22.1;	13.2;	1.83;	6;	22.1;	6;	14.1;	5.4;	1.83;	12;	14.1;	12;
2700;	22.7;	11.4;	2.08;	13;	22.7;	13;	31.0;	19.7;	2.15;	13;	31.0;	13;
3600;	14.0;	5.1;	2.00;	10;	14.0;	10;	26.5;	14.1;	2.50;	18;	26.5;	18;
4500;	38.8;	24.9;	2.36;	14;	38.8;	14;	20.3;	10.7;	1.83;	12;	20.3;	12;
Total;	25.8;	14.6;	2.12;	43;	25.8;	43;	23.5;	12.8;	2.13;	55;	23.5;	55;

Table of Delay

File: C:\Documents and Settings\employee\Desktop\TWSC\Cumulative Plus Project_Walmart_PM.inp
Comment:
Date: Tuesday, July 14, 2009 11:07:35 PM
VISSIM: 5.10-05 [17268]

No. 1: Travel time section(s) 1
No. 2: Travel time section(s) 2

Time;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;
VehC;	All;;;;;;						All;;;;;;					
No.:;	1;	1;	1;	1;	1;	1;	2;	2;	2;	2;	2;	2;
900;												
1800;	13.2;	3.8;	1.75;	8;	13.2;	8;	10.8;	3.7;	1.63;	16;	10.8;	16;
2700;	12.8;	4.1;	1.78;	9;	12.8;	9;	18.6;	8.1;	2.21;	19;	18.6;	19;
3600;	11.7;	2.4;	1.50;	4;	11.7;	4;	26.2;	17.2;	2.06;	18;	26.2;	18;
4500;	22.0;	8.5;	2.14;	7;	22.0;	7;	16.0;	6.5;	1.80;	20;	16.0;	20;
Total;	15.1;	4.9;	1.82;	28;	15.1;	28;	18.1;	8.9;	1.93;	73;	18.1;	73;

Table of Delay

File: C:\Documents and Settings\employee\Desktop\TWSC\Cumulative Plus Project_Walmart_PM.inp
Comment:
Date: Tuesday, July 14, 2009 11:10:28 PM
VISSIM: 5.10-05 [17268]

No. 1: Travel time section(s) 1
No. 2: Travel time section(s) 2

Time;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;	Delay;	Stopd;	Stops;	#Veh;	Pers.;	#Pers;
VehC;	All;;;;;;						All;;;;;;					
No.:;	1;	1;	1;	1;	1;	1;	2;	2;	2;	2;	2;	2;
900;												
1800;	11.5;	2.5;	1.38;	13;	11.5;	13;	12.3;	2.5;	1.90;	10;	12.3;	10;
2700;	25.8;	13.3;	2.27;	15;	25.8;	15;	24.7;	13.9;	1.93;	14;	24.7;	14;
3600;	20.9;	10.0;	1.92;	12;	20.9;	12;	13.7;	5.2;	1.65;	17;	13.7;	17;
4500;	17.4;	8.5;	1.80;	10;	17.4;	10;	34.8;	22.7;	3.00;	11;	34.8;	11;
Total;	19.2;	8.7;	1.86;	50;	19.2;	50;	20.9;	10.7;	2.06;	52;	20.9;	52;