

APPENDIX I

SR 45 SPOT SPEED STUDY

MEMORANDUM

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Architectural, Engineering, Planning and Environmental Services

To: Tanya Kristoff, P.E., RS&H **Date:** April 24, 2009
Project: SR 45 PD&E Study **Project No:** 238648-1
Marion County, Florida
From: Brian Kirkpatrick, P.E., RS&H **Copies to:** File
Purpose: **SR 45 Vehicle Spot Speed Study Summary**

On April 23, 2009, a vehicle spot speed study was conducted along SR 45 (US 41) at two locations. The project area consists of rolling terrain. To represent the overall project terrain, one site (Site 1) was chosen in an area at the base of a crest vertical curve, and one site (Site 2) was chosen in an area with flat terrain. The two locations are as follows:

Site 1 - Approximately 1,000 feet north of SW 99th Place (~M.P. 2.70)

Site 2 - At the unsignalized intersection of SW80th Place Road (~M.P. 4.22)

The purpose of the vehicle spot speed study was to measure and analyze vehicle speed characteristics (such as average speed, 85th percentile speed, and 10-mph pace) at specific locations along SR 45 under the current traffic and environmental conditions. Speed measurements were collected for a one-hour period at each of the sites. The raw data is attached on following pages along with calculation worksheets. The current posted speed limit is 55 mph in this area.

In addition to collecting speed data, vehicle classes were also recorded. Classification codes include the following:

C = passenger car/pick-up truck

B = bus

T = truck (six or more tires, single unit)

M = multi-unit (tractor trailer)

Summary of Vehicle Speed Characteristics

Site 1

Speed measurements collected	285
Average vehicle speed (mph)	48.9
85 th percentile speed (mph)	52.8
10-mph pace	45 – 54 mph

Site 2

Speed measurements collected	306
Average vehicle speed (mph)	53.9
85 th percentile speed (mph)	57.9
10-mph pace	50 – 59 mph

Notes: Measures speeds at Site 1 were considerably lower than Site 2. This difference can be attributed to the signalized intersection located at SW 99th Place and the rolling terrain.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
VEHICLE SPOT SPEED STUDY

FORM 750-010-03
 TRAFFIC ENGINEERING
 10/99

LOCATION ID: <u>SR 45 Site 1</u>	SECTION: <u> </u>
LOCATION: <u>SR 45 North of 99th Place</u>	MP: <u>2.70</u>
POSTED SPEED (mph): <u>55 MPH</u>	COUNTY: <u>Marion</u>
DATE: <u>4-23-09</u>	PAVEMENT CONDITION: <u>good</u>
OBSERVER: <u>BK, JM</u>	TIME FROM: <u>11:05 AM</u> TIME TO: <u>12:05 PM</u>

REMARKS: Two lane highway (NO median)

NUMBER OF VEHICLES <u>N</u> BOUND					SPEED (mph)	NUMBER OF VEHICLES <u>S</u> BOUND					BOTH DIRECTIONS			
CUM. TOTAL	TOTAL	20	15	10		5	5	10	15	20	TOTAL	CUM. TOTAL	TOTAL	CUM. TOTAL
					60.0								1	
	1				9									
	1				8									
	1				7								2	
	6				5								3	
	5				5								9	
	2				4								9	
	7				3								8	
	7				2								12	
	11				1								6	
	22				2								19	
	15				9								18	
	12				8								15	
	5				7								11	
	7				5								9	
	10				4								11	
	6				3								5	
	5				2								5	
	4				1								6	
	2				1								3	
					10									
					9									
	1				8								1	
					7									
	1				6									
					5									
					4									
					3									
					2									
					1									
	1				0									
					9									
					8									
					7									
					6									
					5									
					4									
					3									
					2									
					1									
					0									
TOTALS						TOTALS								

SPEED DATA SUMMARY	BOUND	BOUND	BOTH DIRECTIONS	ENGINEER: <u>BK</u>
85th PERCENTILE SPEED			<u>53</u>	DATE: <u>4-23-09</u>
10 mph PACE			<u>45-54</u>	

Avg speed = 49

Speed	speedxno	Northbound	Southbound	NB&SB tot	NB&SB Cum Tot	10 mph pace
62	62	0	1	1	285	55
61	0	0	0	0	284	73
60	0	0	0	0	284	90
59	59	1	0	1	284	131
58	58	1	0	1	283	163
57	171	1	2	3	282	189
56	504	6	3	9	279	202
55	770	5	9	14	270	209
54	594	2	9	11	256	216
53	795	7	8	15	245	216
52	988	7	12	19	230	211
51	867	11	6	17	211	202
50	2050	22	19	41	194	190
49	1617	15	18	33	153	149
48	1296	12	15	27	120	116
47	752	5	11	16	93	91
46	736	7	9	16	77	75
45	945	10	11	21	61	60
44	484	6	5	11	40	39
43	430	5	5	10	29	28
42	420	4	6	10	19	18
41	205	2	3	5	9	8
40	0	0	0	0	4	3
39	0	0	0	0	4	4
38	76	1	1	2	4	289
37	0	0	0	0	2	287
36	36	1	0	1	2	287
35	0	0	0	0	1	286
34	0	0	0	0	1	286
33	0	0	0	0	1	
32	0	0	0	0	1	
31	0	0	0	0	1	
30	30	1	0	1	1	
	13945			285		

216 10mph pace > 45-54mph

85th % 242 > 52.8 mph

avg speed > 48.93

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
VEHICLE SPOT SPEED STUDY

FORM 750-010-03
TRAFFIC ENGINEERING
10/99

LOCATION ID: <u>SR 45 Site 2</u>	SECTION: _____
LOCATION: <u>SR45 - SW 80th place Road</u>	MP: <u>4.222</u>
POSTED SPEED (mph): <u>55 MPH</u>	COUNTY: <u>Marion</u>
DATE: <u>4-23-09</u>	PAVEMENT CONDITION: <u>Good</u>
OBSERVER: <u>BK & JM</u>	TIME FROM: <u>1:36 PM</u> TIME TO: <u>2:36 PM</u>

REMARKS: 2-Lane Highway (Center Turn Lane)

NUMBER OF VEHICLES		N BOUND					SPEED (mph)	S BOUND					BOTH DIRECTIONS	
CUM. TOTAL	TOTAL	20	15	10	5	3 rd	5	10	15	20	TOTAL	CUM. TOTAL	TOTAL	CUM. TOTAL
1						10								
						9								
						8								
						7	C							1
1						6	C							
2						5	C							
1						4	C						1	
4						3	C	C	C				4	
1						2	C	C					2	
7						1	C	C					3	
9						0	C	C	C				5	
5						8	C	C	C				4	
9						7	C	C	C	C			7	
16						6	C	C	C	C	C		13	
11						5	C	C	C	C	C	C	23	
17		C	C	C	C	4	C	C	C	C	C	C	18	
14		C	C	C	C	3	C	C	C	C	C	C	18	
14		C	C	C	C	2	C	C	C	C	C	C	17	
6						1	C	C	C	C	C		14	
7						0	C	C	C	C	C		12	
5						9	C	C	C	C			7	
3						8	C	C					3	
2						7	C	C					5	
1						6	C						2	
2						5	C	C	C				4	
						4	C							
						3	C						1	
						2	C						1	
						1								
						0								
						9								
						8								
						7								
						6								
						5								
						4								
						3								
						2								
						1								
						0								
						0								
TOTALS											TOTALS			

SPEED DATA SUMMARY	_____ BOUND	_____ BOUND	BOTH DIRECTIONS	ENGINEER: <u>BK</u>
				DATE: <u>4-23-09</u>
	85th PERCENTILE SPEED			<u>58</u>
10 mph PACE			<u>50-59</u>	

Avg speed = 54

Speed	speedxno	Northbound	Southbound	NB&SB tot	NB&SB Cum Tot	10 mph pace
81	81	1	0	1	306	1
80	0	0	0	0	305	0
79	0	0	0	0	305	0
78	0	0	0	0	305	0
77	0	0	0	0	305	0
76	0	0	0	0	305	1
75	0	0	0	0	305	2
74	0	0	0	0	305	2
73	0	0	0	0	305	5
72	0	0	0	0	305	10
71	0	0	0	0	305	16
70	0	0	0	0	305	20
69	0	0	0	0	305	30
68	0	0	0	0	305	44
67	67	0	1	1	305	53
66	66	1	0	1	304	68
65	0	0	0	0	303	90
64	192	2	1	3	303	124
63	315	1	4	5	300	156
62	372	4	2	6	295	183
61	244	1	3	4	289	208
60	600	7	3	10	285	224
59	826	9	5	14	275	233
58	522	5	4	9	261	232
57	912	9	7	16	252	231
56	1288	10	13	23	236	223
55	1870	11	23	34	213	204
54	1890	17	18	35	179	174
53	1696	14	18	32	144	140
52	1612	14	17	31	112	109
51	1020	6	14	20	81	81
50	950	7	12	19	61	367
49	637	6	7	13	42	348
48	384	5	3	8	29	335
47	376	3	5	8	21	327
46	184	2	2	4	13	319
45	180	0	4	4	9	315
44	44	1	0	1	5	311
43	43	0	1	1	4	310
42	126	2	1	3	3	309
	16497			306		

233 10mph pace > 50-59mph

85th % 260 > 57.9 mph

avg speed > 53.91