One-Way Street Movement vs. Two-Way Street Movement

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The Traffic Engineering Department of the City of Fort Wayne recently conducted a before-and-after study of traffic volume trends and speed-delays encountered on the east and west one-way street system now in operation as compared to two-way street movement. This study was confined to the central business district only, as the traffic survey and recommendations were basically confined within this area.

Twelve-hour volume counts of all movements at 12 intersections on Jefferson Street, Washington Boulevard, Wayne Street, and Berry Street, from Harrison Street to Clinton Street, were counted and tabulated for comparison with the former count (Table 1) of 1946 at the same location; but under two-way traffic operation. Table 2 shows the comparison and the percentage of gain in volume. This table indicates that all the streets of the one-way street system show a percentage of gain over the former two-way operation.

Washington Boulevard shows a 46.6 percent gain for high, and Berry Street, 8.9 percent gain for low. The table indicates that the street combination of Washington Boulevard westbound, and Wayne Street eastbound shows the greatest percentage of gain in volume. These streets are the combination which traverses the heart of the central business district.

On a comparison basis of one-way users of two-way operation during the peak hour (4 P.M. to 5 P.M.) the percentage of gain on the present one-way street system over the former system of two-way operation is very convincing.

The main east and west state routes and crosstown streets of Jefferson Street and Washington Boulevard show the greatest percentage of gain of 34.9 percent and 70.9 percent, respectively.

Table 3 is a comparison summary of the traffic speeds and traffic delays encountered during the course of travel on Jefferson Street,

Washington Boulevard, Wayne Street, and Berry Street, between Monroe Street and Fulton Street under one-way operation, as compared to two-way traffic movement.

It was brought out in the recent traffic survey of the central business district that speeds were prevailing on these streets within this area as low as 7 m.p.h. The factual data as set out in Table 3 are self-evident. The "before" study indicates that over-all speeds reached a high of 9 m.p.h. on Jefferson Street, and a low of 6.9 m.p.h. on Washington Boulevard, while Wayne and Berry streets remained within close range of each other at speeds of 8.9 and 8.1 m.p.h., respectively.

The comparison "after" study indicates that former over-all speeds of a high as mentioned as prevailing upon Jefferson Street have been increased 30.2 percent, while a low speed as found upon Washington Boulevard has been increased 40.5 percent. It may be noted that comparable increases of over-all speeds have been observed on Wayne and Berry streets of as much as 26 percent and 50.5 percent, respectively.

Field observance studies at signalized intersections where two-way traffic is in operation and during a "green" period will move from *10 to 12 cars* through the intersection, while the same "green" period at a one-way street approach to the intersection will clear from *15 to 20 vehicles.*

A summary of the above statements indicates that over-all speeds on one-way streets have been increased as much as 50.5 percent above two-way street operation, and delay periods have been reduced as much as 77.9 percent. The efficiency of the intersection has also shown an improvement of 59 percent. A comparison of the two systems of street operations shows an increase in traffic volume, which may be pointed to as one of the major accomplishments achieved by the use of one-way streets in the relief of congestion and expediting the flow of traffic.

Further improvements in the above factors are dependent upon improved parking conditions, pedestrian regulation, and a new signal system.

TABLE 1

TWO-WAY STREET DATA
July, 1946

Street	From	To	Length of Course				Data Central Business District Only				
			Over-all		C.B.D.		Average Pavement Width	Peak Hr. Speed Over-all 4-5 P.M.	Accidents All types 4-Year Period	Median Average 12-Hour Flow Per Block	
			Blocks	Feet	Blocks	Feet					
EAST-WEST STREETS										East-bound	West-bound
Baker	Fairfield	Calhoun	4	1930	4	1930	38′	.....	50	1750	1125
Lavina	Broadway	Fairfield	2	600	.....	.....	.....	.....	.....	.....	.....
Brackenridge	Calhoun	Broadway	6	2580	4	1930	30′	.....	65	1000	750
Brackenridge	Calhoun	Hanna	6	2600	3	1300	30′	.....	45	1500	1300
Douglas	Hanna	Calhoun	6	2600	3	1300	30′	.....	50	1100	900
Wayne	Thieme	Monroe	18	7250	8	3600	42′	8.9	117	2100	2400
Berry and Monroe	Wayne and Monroe	Thieme and Wayne	19	7750	8	3600	42′	8.1	152	2700	2400
Jefferson	Junction with Washington	Division and Maumee	25	10350	8	3600	42′	9.0	295	3900	3100
Maumee and Washington	Division	Junction with Jefferson	25	10350	8	3600	42′	7.0	210	3100	3000
NORTH-SOUTH STREETS										North-bound	South-bound
Ewing	Pearl	Baker	9	2800	9	2800	30′	9.2	80	1525	1380
Webster	Baker	Pearl	9	2800	9	2800	28′	10.7	90	1600	1400
Harrison	Columbia	Rudisill	28	11800	10	2400	42′	5.6	240	4300	3800
Clinton	Rudisill	Columbia	28	11800	10	2400	54′	5.5	395	6000	5500
Barr	Columbia	Brackenridge	8	3250	8	3250	36′	10.5	110	1800	2400
Lafayette	Douglas	Columbia	7	2850	7	2850	40′	9.2	110	2500	2700
Court	Berry	Main	1	380	1	380	42′	.....	20	.....	.....

TABLE 2

BEFORE-AND-AFTER STUDY
TWO-WAY VS. ONE-WAY STREET SYSTEM
C.B.D. Only at 12 Locations
(Twelve-hour Period, 7 A. M.—7. P. M.)

Location	Traffic Entering Intersections, All Directions 7 A. M.—7 P. M. Annual Average Basis			Peak-Hour Volume Annual Average Basis		
	Before	After	Change	Before	After	Change
Intersection—						
Calhoun-Jefferson	8,449	12,275	+45.5%			
Calhoun-Washington	9,311	15,353	+64.9%			
Calhoun-Wayne	7,273	12,794	+75.9%			
Calhoun-Berry	6,441	9,784	+51.9%			
Harrison-Jefferson	13,703	18,699	+36.5%			
Harrison-Washington	12,400	17,847	+43.9%			
Harrison-Wayne	11,731	15,422	+31.5%			
Harrison-Berry	11,994	15,371	+28.2%			
Clinton-Jefferson	14,897	18,908	+26.9%			
Clinton-Washington	15,554	20,522	+32.0%			
Clinton-Wayne	14,437	18,137	+25.6%			
Clinton-Berry	13,977	16,149	+15.6%			
Street—						
Jefferson	20,089	23,514	+12.0%	1,774	2,741	+54.9%
Washington	18,775	27,533	+46.6%	1,917	3,274	+70.9%
Wayne	14,371	20,131	+40.0%	1,523	2,100	+37.9%
Berry	15,182	16,533	+ 8.9%	1,720	1,828	+ 6.2%

TABLE 3

SPEED AND DELAY STUDIES (BEFORE AND AFTER)
ONE-WAY STREET SYSTEM VS. TWO-WAY
Peak Hour

Street	From	To	Distance in Feet	Before			After			Percent of Change	
				Total Time	Total Delay	Over-all Speed M.P.H.	Total Time	Total Delay	Over-all Speed M.P.H.	Delay Reduction	Speed Increase
Jefferson	Fulton	Monroe	4438	5' 50"	1' 53"	9.0	4' 14"	34"	11.9	69.9%	30.7%
Washington	Monroe	Fulton	4438	7' 45"	3' 13"	6.9	5' 12"	1' 20"	9.7	59.6%	40.5%
Wayne	Fulton	Monroe	4438	5' 52"	1' 53"	8.9	4' 27"	35"	11.3	68.8%	26.5%
Berry	Monroe	Fulton	4438	6' 26"	2' 16"	8.1	4' 08"	30"	12.2	77.9%	50.5%