

Modern Roundabouts - The Southlake Experience

Conversion of a Congested All-Way Stop Intersection to Roundabout Control



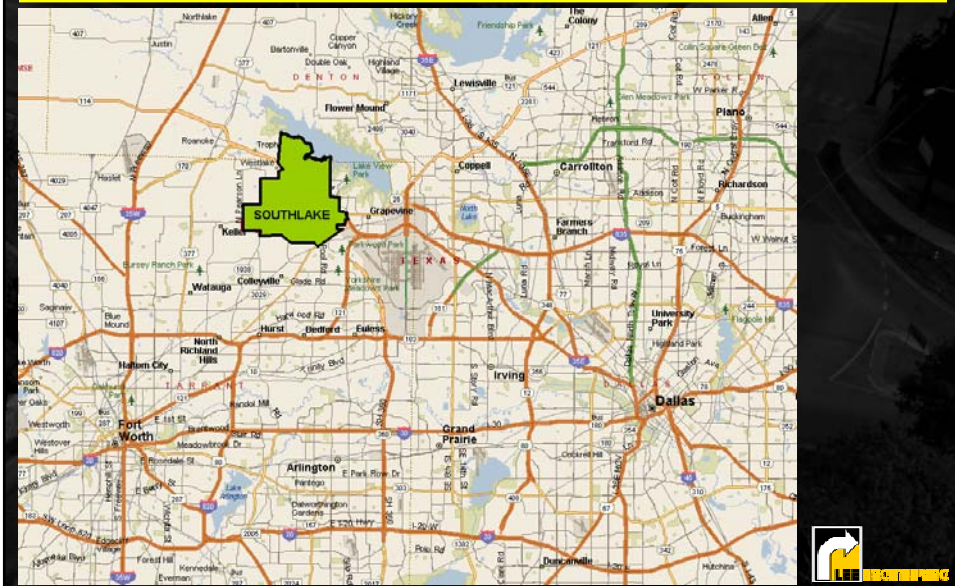
2007 Winter TexITE Meeting
Houston, Texas
February 2, 2007

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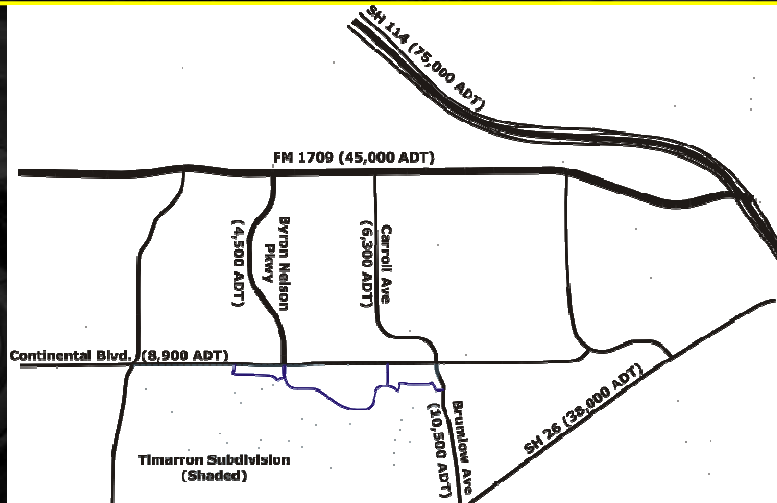


Southlake, Texas

Population ~25,000+



Neighborhood Traffic Issues



- Cut-through traffic
- Speeding on residential streets

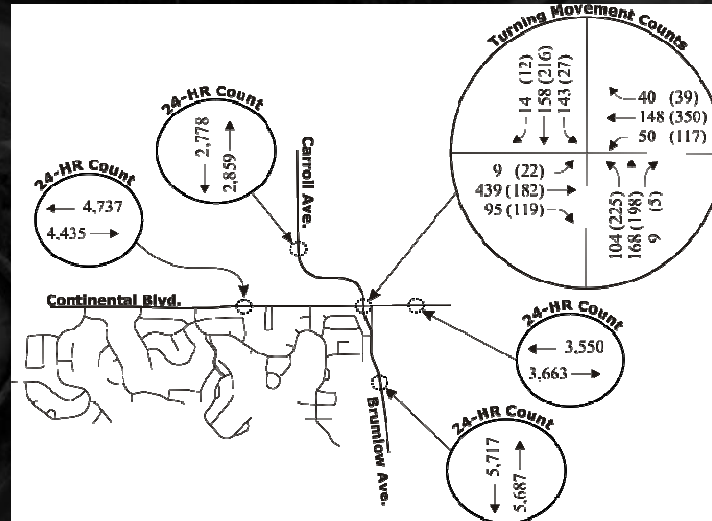


Identify / Confirm Problems

- Data collection
 - Peak hour TMCs (Fall 2002)
 - Daily traffic volume counts (Spring 2002)
 - Origin-destination (license plate-based) data at neighborhood access points
 - Vehicular speeds



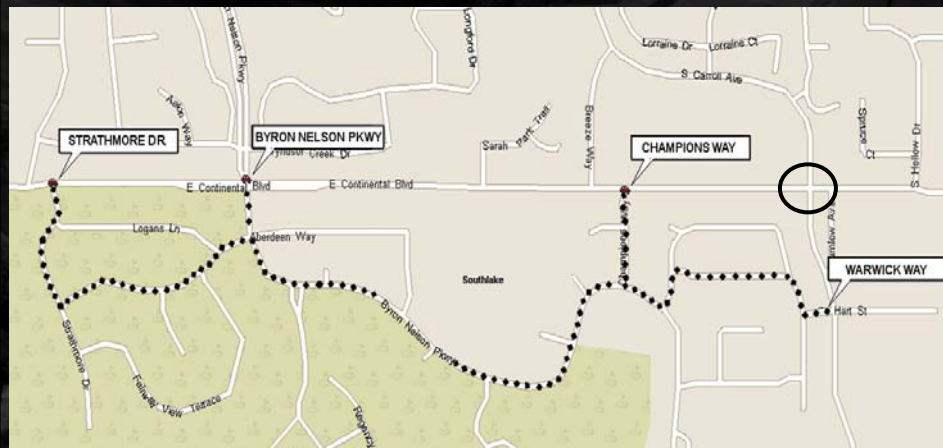
Initial Traffic Volumes



16,450 entering vehicles



Cut-through Traffic



- AM only – Eastbound Continental Boulevard
- 36 % of traffic exiting at Warwick Way



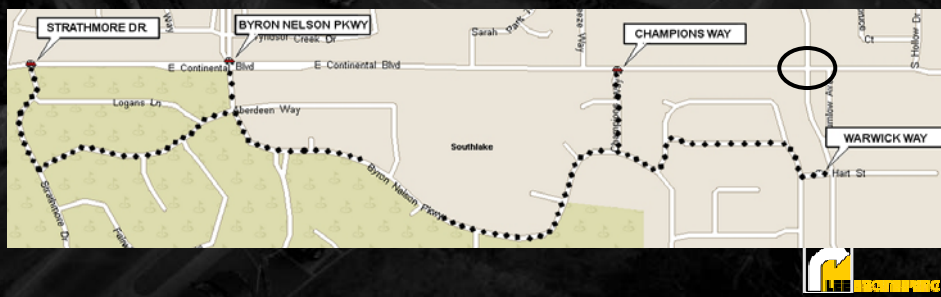
Spot Speed Study

	Posted Speed (mph)	Average Speed (mph)	85 th Percentile Speed (mph)
EB Byron Nelson	30	30	34
WB Byron Nelson	30	28	33
EB Waltham	30	27	31
WB Waltham	30	26	30



Why Cut-Through?

- Avoid AWSC Intersection
 - Max EB queue length = 41
 - Byron Nelson speed limit = 30 mph
 - Byron Nelson (2U) pavement width = 36'
 - Cut-through time savings (1:30 minutes)



Possible Cut-through Solutions

- Traffic Calming on Byron Nelson
 - Medians
 - Chokers
- Increase Capacity (add lanes) at AWSC Continental Blvd at Carroll Ave Intersection
- Change Control Type
 - Traffic signal
 - Roundabout



Possible Cut-through Solutions

Increase Capacity
10 lanes already entering intersection
Small benefit from additional right turn lanes



Possible Cut-through Solutions

- Change Control Type
 - Traffic signal

	Intersection	NB	SB	EB	WB
AM Peak	21.8 (C)	20.7 (C)	20.3 (C)	27.9 (C)	12.7 (B)
PM Peak	19.0 (B)	15.6 (B)	23.3 (C)	21.5 (C)	17.6 (B)



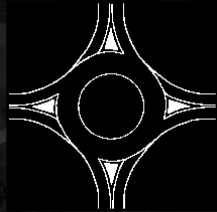
Possible Cut-through Solutions

- Change Control Type
 - Roundabout

		NB	SB	EB	WB
AM Peak	Capacity	652	857	791	890
	V/C Ratio	0.48	0.47	0.74	0.32
PM Peak	Capacity	905	600	820	769
	V/C Ratio	0.50	0.48	0.50	0.73

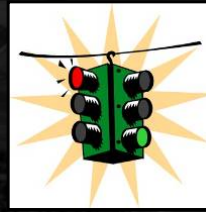


Deciding on a Roundabout



Roundabout

- Cost: \$121,471
- Speed: 15-20 mph
- Safety:
 - 39% fewer crashes
 - 76% fewer injury crashes
- Delay: Shorter
- Space required: More
- Initial opposition: Can be fierce



Traffic Signal

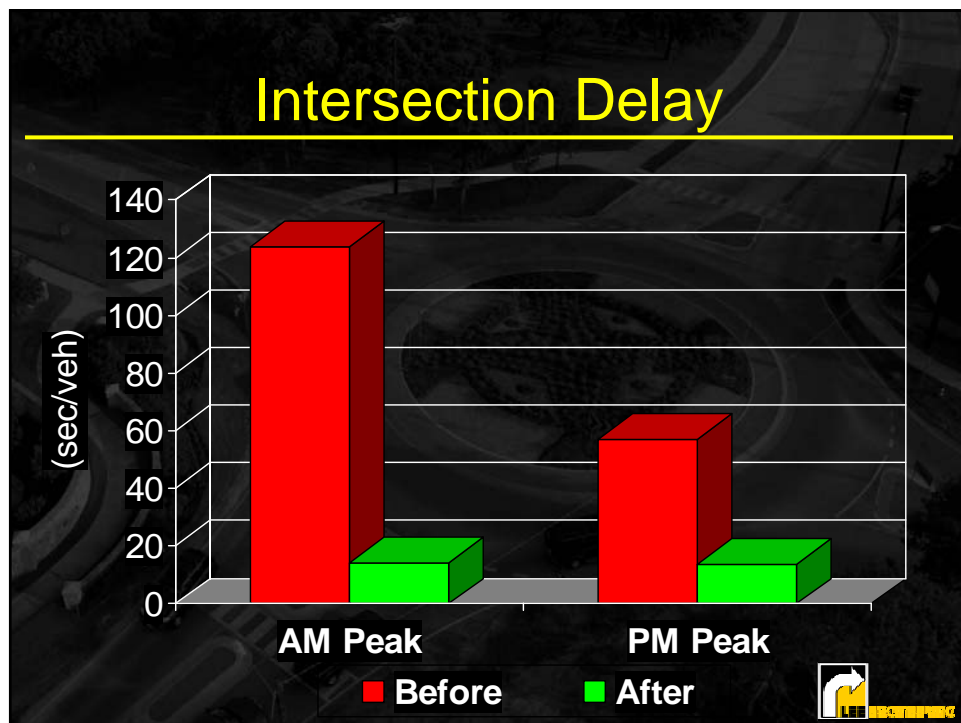
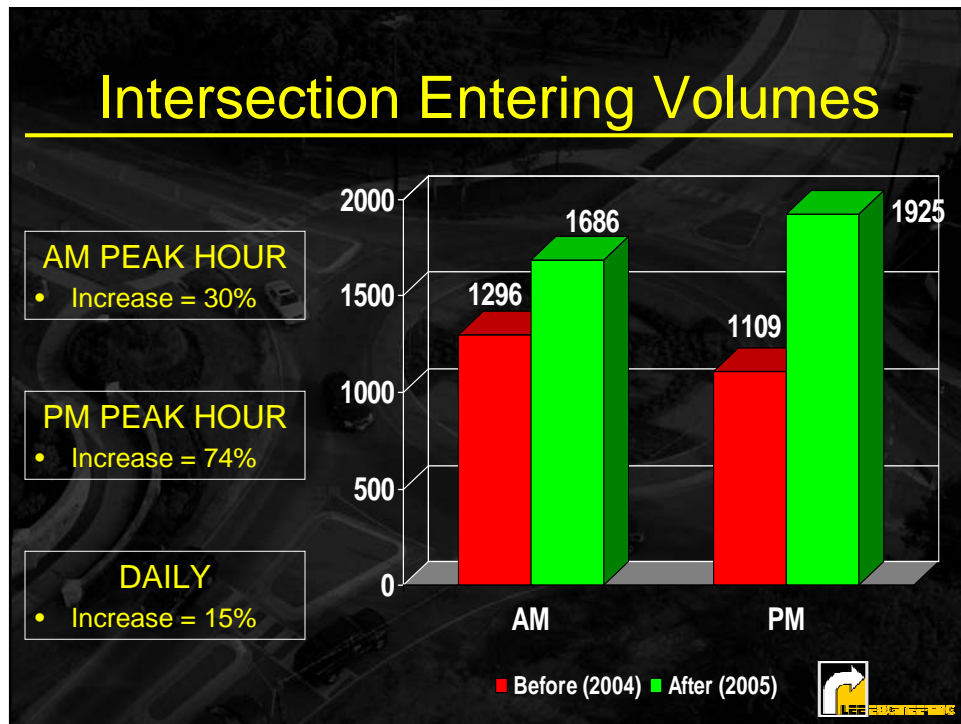
- Cost: \$100,000 + O&M
 - City's first signal
- Speed: 30 mph +
- Safety: Less
- Delay: Longer
- Space required: Less
- Initial opposition: Minor

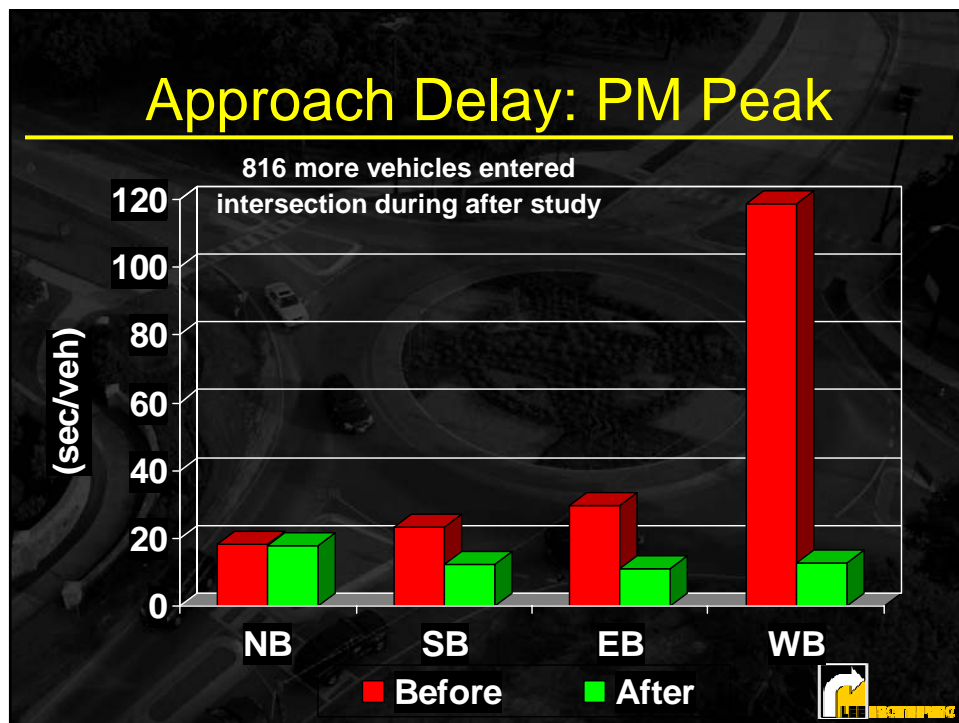
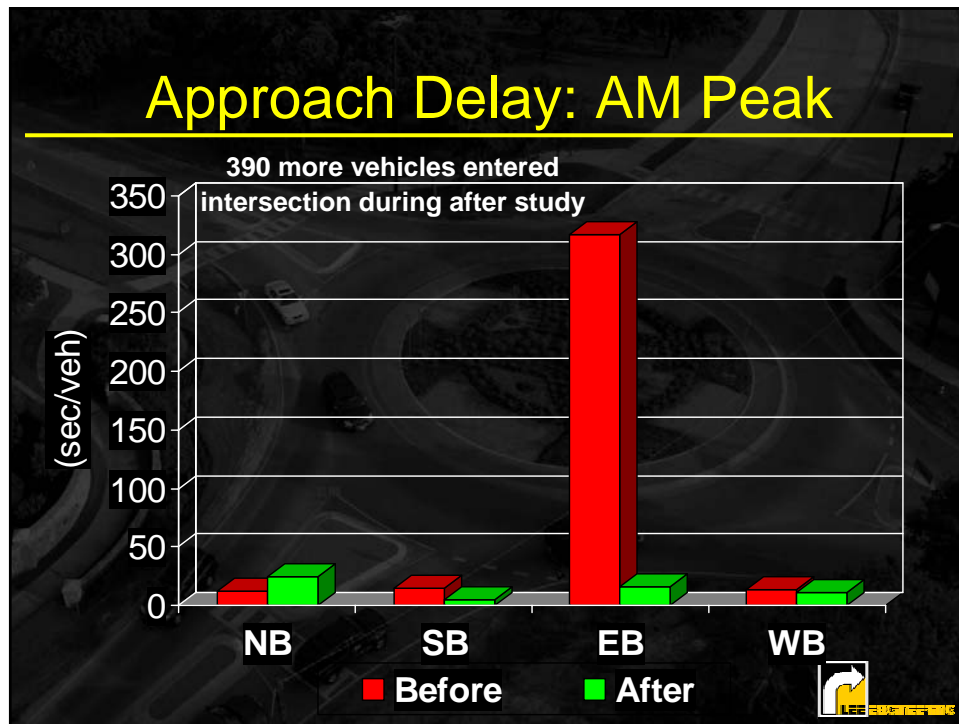


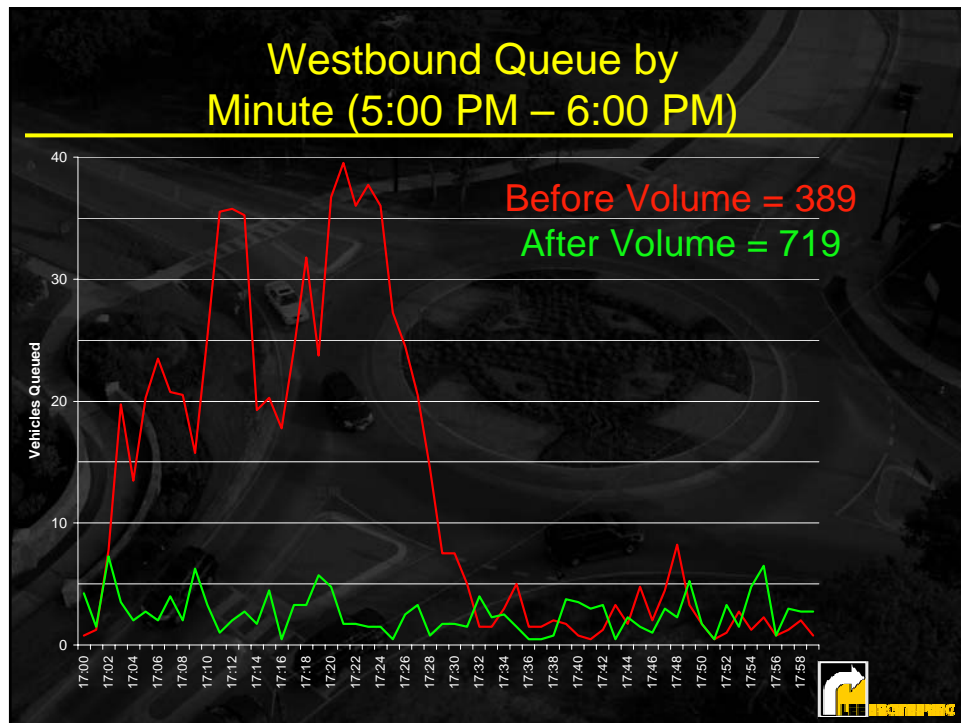
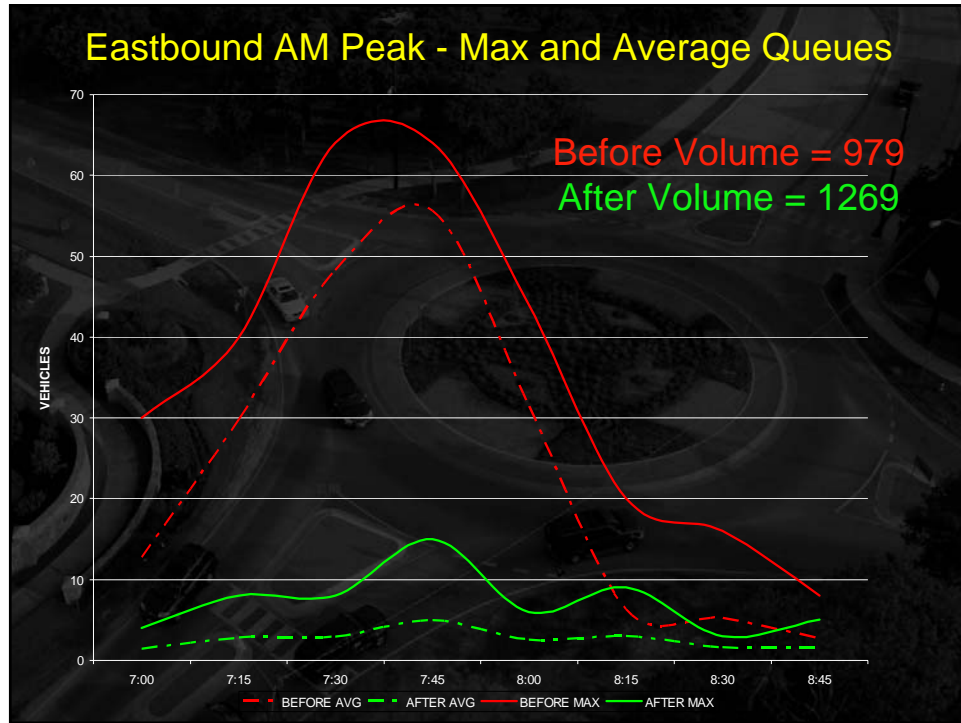
Roundabout Timeline

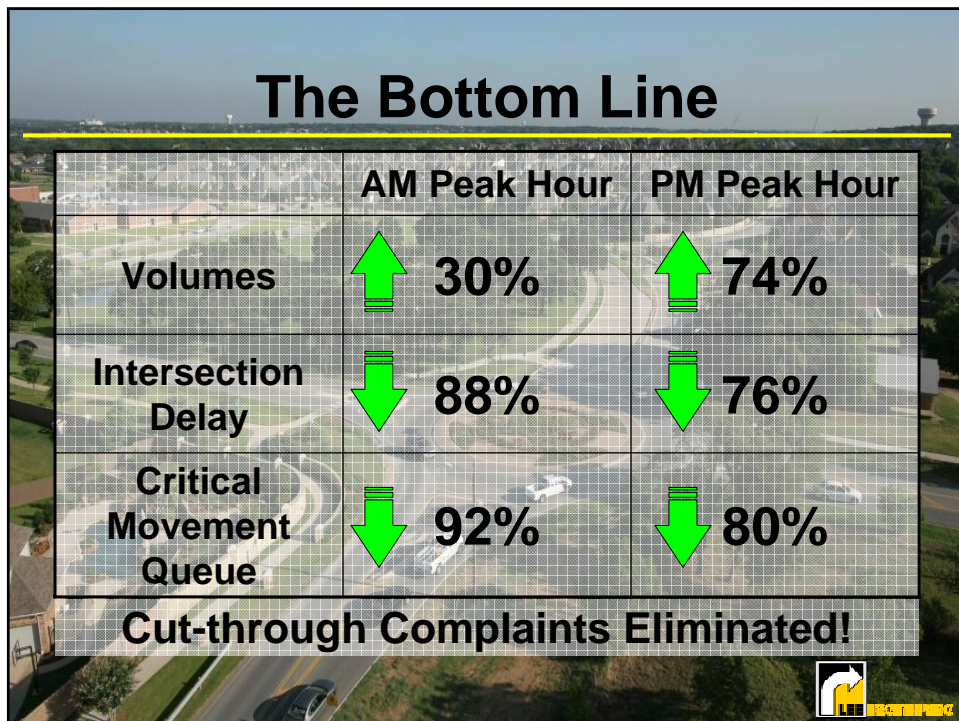
- 2002
 - Fall - Neighborhood study began
- 2003
 - Spring – Neighborhood study completed
- 2004
 - May - Before data collected
 - May - Construction begins after school year
 - July - Functioning as a roundabout
 - August - Roundabout complete
- 2005
 - May – After data collected











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Roundabout Construction





Before



After



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