

E Main Street Operational Analysis: Summary of Results

Total Average Intersection Delay

Peak	2017 No Build (delay in sec)	2017 Build (delay in sec)	Change (%)	2030 No Build (delay in sec)	2030 Build (delay in sec)	Change (%)
AM	147.9	126.9	-14%	165.8	139.2	-16%
PM	164.8	130.4	-21%	169.1	146.4	-13%

Total Directional Intersection Delay

Direction	Base Year 2017 (Delay in Sec)				Future Year 2030 (Delay in Sec)			
	AM NB	AM Build	PM NB	PM Build	AM NB	AM Build	PM NB	PM Build
Eastbound (Main from Greensboro to Merritt Mill)	84.3	78.5	79.9	69.8	84.9	89.0	85.1	85.7
Westbound (Main from Merritt Mill to Greensboro)	54.6	58.5	77.7	72.2	64.5	92.7	63.4	103.6
Northbound (Greensboro from Main to Weaver)	46.2	58.8	62.0	60.0	47.1	74.2	54.3	77.7
Southbound (Greensboro from Weaver to Main)	68.4	43.9	90.6	39.7	86.8	41.5	84.4	40.6

Level of Traffic Stress (LTS) vs Worst Peak Period LOS

Intersection	Intersection LTS		2017 Worst Peak Intersection LOS		2030 Worst Peak Intersection LOS	
	No Build	Build	No Build	Build	No Build	Build
Weaver @ Greensboro	3	3	D-PM	C-PM	C-PM	C-PM
Main @ Greensboro	3	3	C-AM	C-AM	C-AM	C-AM
E Main @ E Weaver	3	1 or 2*	C-AM	C-AM	C-AM	C-AM
E Main @ Lloyd	3	1 or 2*	B-AM	B-AM	B-AM	B-AM
E Main @ Rosemary	3	1 or 2*	C-PM	C-PM	C-PM	C-PM
E Main @ Merritt Mill	3	1 or 2*	D-PM	C-PM	D-PM	C-PM

*Difference between LTS 1 & 2 is dependent on the width of the bicycle lane + buffer

E Main Street Operational Analysis: Definition of Metrics

Level of Traffic Stress (LTS) for Bicycles

Level of Traffic Stress (LTS) is a rating given to a road segment or crossing indicating the traffic stress it imposes on bicyclists. Levels of traffic stress range from 1 to 4 as follow:

LTS 1: Strong separation from all traffic except low speed, low volume.

LTS 2: Except in low speed / low volume traffic situations, cyclists have their own place to ride that keeps them from having to interact with traffic except at formal crossings. Physical separation from higher speed and multilane traffic. Crossings that are easy for an adult to negotiate. A level of traffic stress that most adults can tolerate, particularly those sometimes classified as “interested but concerned.”

LTS 3: Involves interaction with moderate speed or multilane traffic, or close proximity to higher speed traffic. A level of traffic stress acceptable to those classified as “enthused and confident.”

LTS 4: Involves interaction with higher speed traffic or close proximity to high speed traffic. A level of stress acceptable only to those classified as “strong and fearless.”

Source: Mineta Transportation Institute

A visual depiction of the different Levels of Traffic Stress using examples in Carrboro is depicted below.



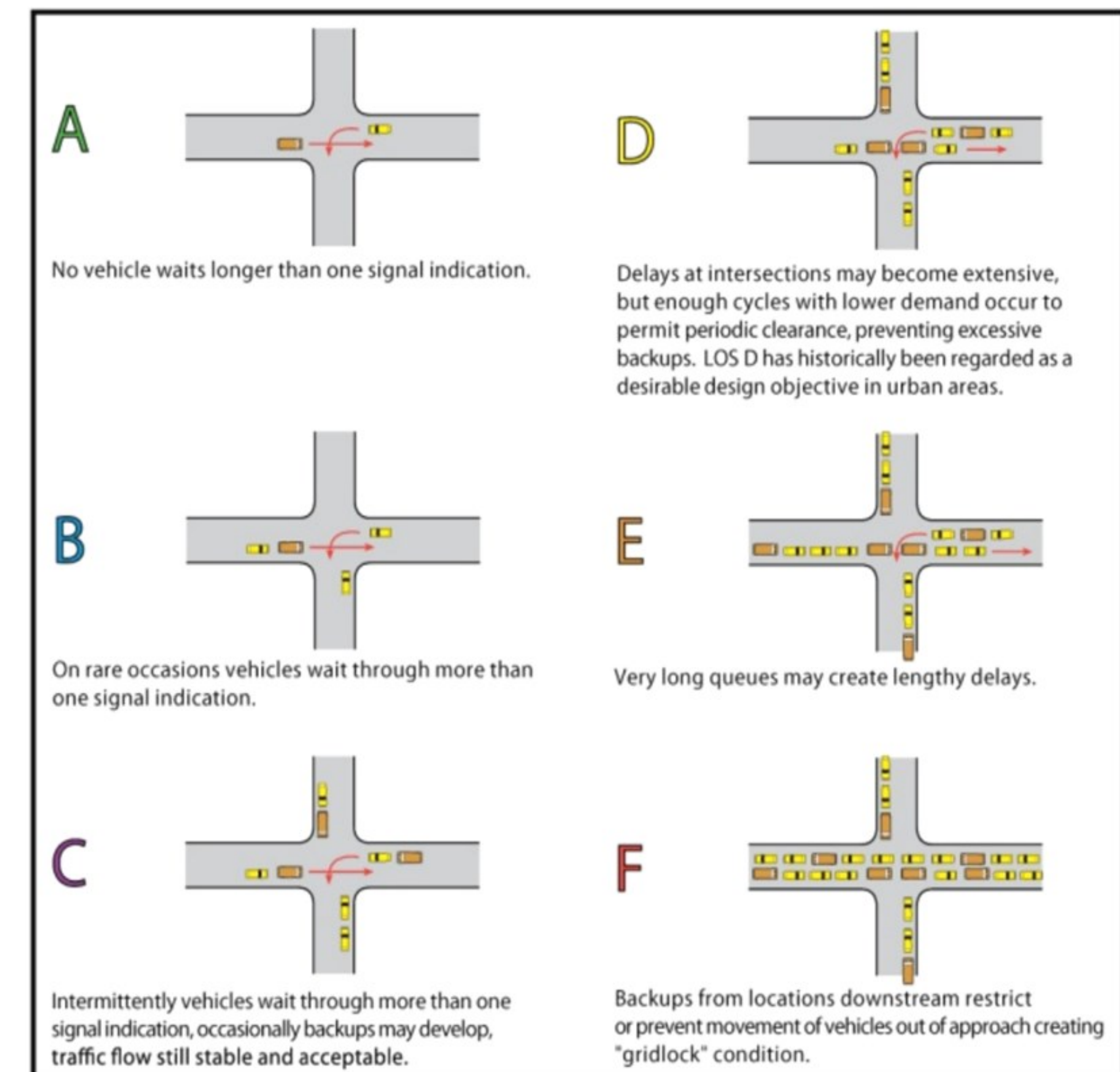
Level of Service (LOS) for Vehicles

Signalized intersection level of service (LOS) is defined in terms of a weighted average control delay for the entire intersection. Control delay quantifies the increase in travel time that a vehicle experiences due to the traffic signal control as well as provides a surrogate measure for driver discomfort and fuel consumption. Signalized intersection LOS is stated in terms of average control delay per vehicle (in seconds) during a specified time period (e.g., weekday PM peak hour). Control delay is a complex measure based on many variables, including signal phasing and coordination (i.e., progression of movements through the intersection and along the corridor), signal cycle length, and traffic volumes with respect to intersection capacity and resulting queues. Source: Highway Capacity Manual, 2010

A table indicating the delay lengths & general description of each Level of Service grade is shown in the lower left. A graphic with a visual representation of the operations of different intersection levels of service is shown in the lower right.

LOS	Average Control Delay	General Description
A	< 10 seconds delay per vehicle per intersection	Free flow
B	10 to 20 seconds delay per vehicle per intersection	Slight delay
C	20 to 35 seconds delay per vehicle per intersection	Acceptable delay
D	35 to 55 seconds delay per vehicle per intersection	Tolerable delay (may miss a cycle)
E	55 to 80 seconds delay per vehicle per intersection	Intolerable delay
F	> 80 seconds delay per vehicle per intersection	Congested with queues remaining

Source: Highway Capacity Manual, 2010



Source: North I-25 Environmental Impact Statement, Colorado Department of Transportation/Federal Transit Administration/Federal Highway Administration, August 17, 2008.