

**APPENDIX A**

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**Level of Service Definitions**

## Appendix A Level of Service Definitions

The Level of Service (LOS) concept was developed to subjectively describe the degree of comfort that the driver feels as they travel through an intersection. Included in this description are such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles. Six grades are used to describe intersection levels of service, ranging from A (the best), to F (the worst) as further explained below.

**Table A-1  
Level of Service Criteria for Signalized Intersections**

Level of Service	Description	Control Delay per Vehicle (seconds)
A	Extremely favorable progression with most vehicles arriving during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	$\leq 10$
B	Good progression, short cycle lengths, or both, with more vehicles stopping than with LOS A, causing higher levels of average delay.	$>10$ and $\leq 20$
C	Higher delays resulting from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.	$>20$ and $\leq 35$
D	Congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines.	$>35$ and $\leq 55$
E	Lengthy delay values associated with LOS E generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	$>55$ and $\leq 80$
F	LOS F is considered unacceptable to most drivers. It indicates oversaturated conditions with arrival flow rates exceeding the theoretical capacity of the intersection. It may also occur at high volume/capacity ratios below 1.0 with many individual cycle failures due to poor progression and long cycle lengths.	$>80$

Source: *Highway Capacity Manual*, 1997

**Table A-2  
Level-of-Service Criteria for Unsignalized intersections**

<b>Delay Range (Seconds)</b>	<b>Level of Service</b>	<b>Minor Street Traffic Characteristics</b>
≤10	A	Little or no delay. Queues are seldom more than one vehicle.
>10 and ≤15	B	Short traffic delays. Occasionally there is more than one vehicle in the queue.
>15 and ≤25	C	Average traffic delays. There is often more than one vehicle in the queue. Drivers begin to feel constricted.
>25 and ≤35	D	Long traffic delays. Queues are regularly more than one vehicle. Drivers feel quite restricted.
>35 and ≤50	E	Very long traffic delays. Demand is near or equal to the probable maximum number of vehicles that can be accommodated by the movement. There is almost always more than one vehicle in the queue.
>50	F	Forced flow conditions with extensive delays caused by geometric and/or operational constraints external to the intersection.

Source: Highway Capacity Manual, 1997.